The Syntactic Projection of Morphological Categories

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I declare that this thesis has been composed by myself and that the research which is reported herein has been conducted by myself unless otherwise indicated.

In this thesis I set out to test three hypotheses about the organization of the Grammar; (1) That the grammar can be given a declarative interpretation, and thus no extrinsic ordering of rules is available, and that syntactic structures have a compositional semantics; (2) That all transparent concatenation results from operations of the rules of syntax; and (3) That all syntactic projections must be phonetically visible. Further, I have assumed that the relationship between the lexicon and syntactic representations is monotonic. In testing these hypotheses I develop an underspecified tree representation for lexical entries which allows lexical information to be organized in a manner which is immediately interpretable by the syntax. These lexical trees, through the formal processes of unification and tree adjunction and the operation of X-bar, yield D-Structure. I propose a parametrization of case-assigning ability into the distribution of the features [+/- NECESSARY] and [+/- UNIQUE] and use this to derive the Extended Projection Principle (for English) and to account for agreement in Labrador Inuttut. This move forces me to arrive at a new treatment of passive in English, however, as verbs in English have the case-assigning matrix [-NECESSARY, -UNIQUE] (i.e., are profligate case-assigners). The analysis of passive proposed subsumes passive to other focus rules such as topicalization, by assuming that the passive morpheme *-en* heads a syntactic projection and assigns the sentential theta-role TOPIC to its external argument position. Topicalization in general is also considered, and proposals made concerning the syntactic structure of topicalized sentences in both Topic Prominent and Subject Prominent Languages. In considering a theta-theoretical analysis of passive, I further propose that animacy effects are properly considered as syntactic, and are best considered as part of the information contained in theta-role assignment. Specifier positions are then considered, and the dichotomy between the characteristics of D-Structure selected and un-selected specifiers is discussed. This consideration leads me to propose a revival of the Raising-to-Object Analysis, with the embedded subject raising to [SPEC, VP], from this, the parallel is drawn with passive, and the possibility of NP-movement to [SPEC, IP]. [SPEC, VP]is then considered as a similar position to [SPEC, IP] with respect to the possibility of NP-movement. Different types of relative clauses cross-linguistically are examined, and the PF-Licensing Principle is shown to make desirable predictions about the structure of the so-called headless relatives. Data from Piapoco is considered in some detail, and the PFLP is shown to derive certain attractive tree structures. Agreement in Piapoco is considered, and a feature percolation through SPEC-head coindexing is shown to give the effect of morpheme harmony on certain verbal incorporation structures. The prohibition against invisible syntactic projections and general considerations of the relationship between heads and their complements in the lexicon leads me to propose a redefinition of barrier, such that any head which selects in some way its complement L-marks that complement and thus voids its barrierhood. In this case, then barriers only arise relativized by position, i.e., specifier position and adjuncts (not sisters to lexical heads). If this definition of barrier is adopted, then Zero Subjacency holds and no counting of barriers is necessary. An extension to the X-bar schema is proposed which underlies equative or predicative constructions. Finally, the hypotheses of this thesis are tested in some detail in analyses of Labrador Inuttut and Lakhota. These analyses highlight the difference between agreement and pronominal incorporation, and the typological difference between languages with and without grammatical function changing rules and overt case marking. In the analysis of Labrador Inuttut it is proposed that those cases characterized by "zero-marking", NOM and ABS, are actually not instances of case-marking at all. It is proposed that NPs assigned these cases are actually coindexed with INFL and thus are not required to be case-marked in order to pass the Case Filter, coindexation with INFL provides these NPs with identification as arguments with respect to propositional predication. In the analysis of Lakhota the structural basis for discontinuous morphemes and pronoun doubling is proposed, and word-internal movement is explored.

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1. The Hypotheses to be tested

In this thesis I explore two major ways of constraining the power of the grammar. The complexity of natural language itself opens the door to multiple analyses. The Grammar, in its theoretical sense, must serve to select among these possible analyses the one that is the closest approximation to the internalized grammar of a native speaker. The grammars which linguists use/write/describe are perhaps best seen as a translation of the internalized grammar into a language which can be manipulated and understood by other linguists. The object of the description, the internal grammar, represents itself in a form which is inaccessible to researchers, that is, by a complicated set of interrelationships between various neural ganglia in a largely non-localized area of the brain. If an alien from an advanced culture were to come to Earth and in some way extract a grammar from a speaker of a particular language, and hand it, or a working model of it, to the world's linguists, it would still be uninterpretable to these linguists, being, most likely, an integrated collection of neurons. The tools used by a linguist to represent these grammars and the structures they generate (e.g. tree diagrams, phrase structure rules, statements of filters or constraints, feature matrixes, etc.) are not actual entities present in the internal grammar, that is, in the mind/brain of the speaker, but are notational devices available in the Grammar Manipulation Language used by linguists, and mostly just referred to as Grammar.

The sheer complexity of language, and diversity of languages, and the attendant problems of learnability, have led to the postulation that a large proportion of the natural language faculty is present innately in humans. This innate capacity for language, referred to by Chomsky as Universal Grammar, severely limits the possibilities for human languages. The structures, or principles, of Universal Grammar are common to all human languages. We will call these universally present elements Core Universals. Besides these core universals, Universal Grammar also includes various parameters of possible variation. These parameters, sometimes envisaged as on-off switches, allow languages to differ from each other in fixed ways. Perhaps the best example of such a parameter is the Null Subject Parameter. Languages with an "on" setting for this parameter demonstrate a certain set of symptoms: "subjectless" sentences are possible, the *that*-trace Filter does not operate, and free inversion of subject and verb are possible. Consider the following examples from Italian and English:

(1) Giovanni parla.

'Giovanni is speaking'

(2) Parla.

*Is speaking.

'S/he is speaking'

(3) Chi crede Maria che parla.

*Who does Maria think that is speaking?

'Who does Maria think is speaking'

Thus where Italian has an "on" setting for the Null Subject Parameter, English has an "off" setting for this parameter.

The notion of Universal Grammar possessing a set of toggle switches keyed to various syntactic phenomena is clearly a crude one. More recently, linguists have tried to derive the parametric effect of the null subject data from other sources, in particular, the existence of "rich" agreement or the pronominal character of INFL, in null subject languages. Further, it has been proposed that all parametric effects derive from differing lexical properties in the morphemes[1] of human languages. Under this conception, the task facing the language learner, given the pre-existence of Universal Grammar, is just to learn the morphemes of the language, along with their properties. This conception of language learning is naively satisfying. Thus we return to the notion of Universal Grammar as that part of the human language ability which is innate, and which is common to all languages. Beyond this are just morphemes with their associated properties.

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[1]I use "morphemes" here rather than "words" as I wish to include bound morphemes (as well as free) in this discussion. In this particular instance, the morpheme AGR in Null Subject languages is the locus of the observed variation.

1.1. *Declarativity and Compositionality*

I will assume in this thesis without much argument that the grammar should be declarative and compositional. By this I mean that there should be no explicit ordering statements, no directionality of processes, etc. The grammar then becomes a principle-driven mapping from one representation to another, as from Lexical Entries, to D-Structure, to S-Structure, to Logical Form, or Phonetic Form. Thus there is no possibility of introducing something like Global Rules, which in early Transformational Grammar had the ability to look back at the derivational history of a string.[2] The only argument I will give in favor of this approach is the old one of constraining the power of the grammar. Methodologically, the grammar should be as constrained as possible in order to discover in what ways it is clearly too restricted, and thus to further delineate the content of Universal Grammar.

By compositionality, I require the grammar to be monotonic, with no loss of information through mapping between levels. Further, I will use semantic compositionality to reinforce the hypothesis below, that all transparent concatenation is syntactic. That is, syntactic structures all display compositional semantics. If a category is derived with a semantics that is non-compositional, then it is not productive, and thus is not syntactic, and must be listed in the lexicon. The most extreme result of this position is that the Lexicalist Hypothesis must be abandoned, as it serves as a non-monotonic barrier between lexical structures and syntactic structures. That is, by making the internal structure of words unavailable to syntax, that information is lost, and the grammar becomes non-monotonic. What happens in practice is generally that the structural information in words is translated into sets of features which percolate to the dominating category, and which are themselves syntactically active, thus rendering the Lexicalist Hypothesis non-monotonic theoretically, but monotonic in practice.[3]

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[2]It is possible that Chomsky (1988) has reintroduced Global Rules through the mechanism of the erasure of "offending" traces based on earlier structures. He comes into this bind through adopting Lasnik & Saito (1984). As he notes, a theory incorporating this rule is a theory which is essentially procedural.

[3]Of course, if all lexical information percolates as features and thus reaches the syntax, then the Lexicalist Hypothesis exists in name only, and has no formal existence.

1.2. *All Transparent Concatenation is Syntactic*

The first way in which I will attempt to limit the power of the theory is by eliminating the need for a dedicated set of morphological operations which are distinct from syntactic operations.

The conception of the grammar as consisting of a series of locations (or components), each with its own forms of input, output, and distinct rules operating on their specific representations, allows the grammar to, in effect, double its power by doubling the available rules, and by providing an extrinsic ordering of rules (that is, rules of one component can be made to apply before the rules associated with another component). In this thesis I will attempt to articulate a model in which there is no need for such a set of distinct components. In order to achieve this, I hypothesize that all cases of transparent[4] concatenation are syntactic.

There exist long recognized difficulties with various key concepts in morphology. These include most noticeably the definition of "word"[5] and the distinction between "inflectional" and "derivational" morphology. If, as it would appear, it is impossible to define and distinguish these concepts pre-theoretically, then the necessity for a separate component which creates "words" can only exist by virtue of the properties of a given theoretical framework, and not due to the properties of the Internal Grammar itself. The null hypothesis, then, must be that there is no morphology. There are only lexical representations, and syntactic operations.

One of the facts which we do know about the brain is that there is a very large storage capacity. Those operations which have been considered morphological, but which do not involve transparent concatenation are thus listed in the lexicon. Various psycholinguistic studies appear to bear out this approach.

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[4]By transparent concatenation I intend to exclude the concatenation of morphemes which involves the application of extensive morphophonological rules. The only phonological rules which apply across transparent concatenations are those which are not morphologically conditioned.

[5]See, for example, Di Sciullo and Williams (1987) for a somewhat biased overview.

Earlier attempts to distinguish morphological operations from syntactic ones sought to delineate properties which could be associated with one component or the other. These included:

a) Productivity: syntax was thought of as involving rules which applied freely whenever their structural description was met. Idiosyncracies of rule application associated with differing lexical items were assumed to be a product of morphological rules, which were thus much more specific than syntactic rules.

b) Recognizability of newness: while no one notices everytime they hear a new sentence, speakers do tend to notice new words. This was taken to be evidence of the application of syntactic rules versus items being listed in the lexicon.

Clear problems exist with both of these characteristics. Syntactic rules are also clearly lexically limited in their application, while some derivational morphology is extremely productive (e.g. gerundive nominals). The recognition of new forms is clearly significant, though not necessarily to the structure of the grammar. It is possible that it is merely the shortness of the collocation of morphemes in a word as opposed to the length of collocation of morphemes in a sentence, that is noticeable. Human cognition appears to be sensitive to frequency of collocation of short series of segments. Further, if we assume that syntactic trees arise, in part, through the projection of morphemes, then the appearance of an unfamiliar morpheme which projects into the syntax will set the speaker with a further problem of acquisition.

Anderson (1989) proposes a further distinction between syntactic and lexical rules. He notes that word order can differ according to whether syntactic or lexical rules are involved. He cites the following example from the Wakashan language Kwakwala (Anderson 1984):

(4) ina-gil-ida ts'idaq

oil-make-DEM women

'The women are making (fish) oil.'

Whereas syntactically an object must follow the verb, if that object has been incorporated it then precedes the verb. This fact, however, does not provide evidence of a distinction between morphology and syntax, but between the behavior of incorporated nominals, and lexical NPs. If a syntactic theory is sufficiently elaborated to distinguish these, then this difference in ordering follows not from a difference in components of the grammar, but from the difference between bound and free arguments. In this example, we might assume that the lexical NP must follow the verb due to the case assigning properties of the verb. An incorporated object does not need to be case-marked, and thus can precede the verb, in line with general principles of left adjunction. Drawing on previous work (Chomsky 1970, Jackendoff 1975, Wasow 1977, Anderson 1977), Anderson suggests the following list of differences between syntactic and lexical rules:

> (i) Lexical rules, but not syntactic rules, are necessarily 'structure preserving' (in roughly the sense of Emonds 1976), since all lexical items - whether basic or derived by lexical rule - must be inserted into the same set of base structures.
>
> (ii) Lexical rules may relate items from distinct lexical classes (e.g. deriving nouns from verbs), while there is no reason to give syntactic rules the power to change category.
>
> (iii) Lexical rules are *local* in the sense that they can only refer to material within the subcategorization frame of a single item. Syntactic rules, on the other hand, can relate positions not within a single item's subcategorization frame, as for instance in the case of 'subject to subject raising.'
>
> (iv) Lexical rules have access to the thematic relations (theta-roles) associated with particular arguments, while there is no reason to believe a syntactic rule could ever affect, say, exactly *agents* (as opposed to affecting exactly *subjects*).
>
> (v) Lexical rules apply to one another's outputs, but not to the output of syntactic rules.
>
> (vi) Lexical rules can have arbitrary, lexical exceptions, while syntactic rules are structurally general.
>
> (Anderson 1989: 148-9)

These in themselves are not sufficient as arguments to motivate the existence of a dedicated component, whose purpose is to produce items distinguished most easily orthographically, by

the absence of internal blank spaces (i.e., words).[6] Let us consider these properties in turn, given recent developments in syntactic theory. Crucial to this discussion will be the following assumptions: (a) Move-alpha applies to X^0 categories as well as to phrasal categories, though different restrictions apply; (b) X^0 movement, or head movement, produces X^0 categories by adjunction to governing heads in the syntax; (c) NP movement in passive and in topicalization is a syntactic rule.

Criterion (i): Anderson uses 'structure-preservation' to distinguish between lexical and syntactic rules. It is not completely clear what he means by this. Syntactic rules are also considered to be 'structure preserving', this in part limiting phrasal movement to specifier positions, head movement to head adjunction structures.[7] He also seems here to be referring to the commonly held belief that all nouns, for example, whether derived or not, have the same lexical insertion property, that is, are inserted under the node N. We will see in the next chapter that this is not necessarily the case. Thus it is no longer possible to distinguish lexical from syntactic rules based on their structure-preserving capacity.

Criterion (ii): Lexical rules may change category, syntactic rules may not. The mechanism of head movement through Chomsky adjunction (a well-known syntactic operation) has the effect of relating items from distinct lexical classes to produce multi-morphemic units through syntactic operations which have independent motivation in the grammar. Thus syntactic rules effect a "category change" by adjoining one category to another. The category adjoined to remains the head, and thus shares its major features with the dominant node. However, it is not necessary to think of syntactic rules as changing category as they leave the original category of the moved item intact, both in the adjunction structure, and at the extraction site,

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[6]The canonization of traditional notions of grammar, which distinguished morphology from syntax, has been particularly pervasive and difficult to question. It seems necessary, however, not to adopt any traditional grammatical notions without first testing their utility given the advances in linguistics in the last fifty years.

[7]Although this article was published relatively recently, it does not appear to take into account the past decade of developments in syntactic theory. Many linguistic analyses, including this thesis, no longer assume the existence of a rule of lexical insertion such as characterized the Standard Theory. X-Bar Theory, to a great extent, has replaced this rule with a mechanism for projection from lexical items to syntactic structures.

where a coindexed trace remains. Arguably, any movement involves a change in category - WH-movement to [SPEC, CP] replaces the underspecified SPEC position with a +WH phrase.

Criterion (iii): Lexical rules are local, syntactic rules need not be. A general tendency in syntactic argumentation in the past decade has been to strengthen the locality requirement on syntactic rules. Arguably, the principle of Subjacency, the ECP, and the general notion of Barriers serve to enforce locality in syntactic movement. Head movement differs from phrase movement in being very strictly local. The Head Movement Constraint (Baker 1988) restricts head movement to those cases where an X^0 category adjoins to the head which governs it. The importance of the "subcategorization frame" arises in syntax in the definition of barrier. The relationship between a head and its subcategorized complement allows the head to L-mark the complement, and thus void the complement's barrierhood.[8]

Criterion (iv): Lexical rules have access to theta-roles, syntactic rules do not. This appears to be quite simply untrue, given patterns of passivization in many languages. In general, thematic roles are relevant to the syntax in topicalization and passive.[9]

Criterion (v): Lexical rules are ordered prior to syntactic rules. This is a largely theory-internal distinction. The only manifestation it may have in the data is the supposed ordering of derivational versus inflectional affixation. In general, it has been believed that inflectional affixes occur outside of derivational ones. Data from many languages exists which shows this can only be a tendency, and not a hard and fast rule. Consider the following deverbal nouns in Tamil:[10]

(5) camay-kir-atu [camaykkiratu]

cook-PRESENT-NOMINAL

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[8]See Chapter Seven for further discussion of this point.

[9]See Chapter Five for a discussion of the importance of theta-roles to topicalization.

[10]I am indebted to K. Nagitha thero for this data.

'cooking'

(6) pati-ppi-kir-atu [patippikkiratu]

learn-CAUS-PRESENT-NOMINAL

'teaching'

(7) va-nt-a-unka [vantavunka]

come-PAST-REL-NOMINAL

'those who came'

Criterion (vi): Lexical rules are idiosyncratic, syntactic rules are exceptionless. This has been shown to be a gross oversimplification of the operation of syntactic rules. The most common examples of lexical exceptions to syntactic rules involve passive and dative shift. For example, not all transitive verbs allow passive:

(8) Bill resembles Sally's mother.

(9) *Sally's mother is resembled by Bill.

Further, dative shift cannot always apply:

(10) Rockefeller donated his collection to the museum.

(11) *Rockefeller donated the museum his collection.

None of Anderson's criteria for distinguishing lexical from syntactic rules can be shown to hold. It would appear that the separation of morphology from syntax arises more from an intuition than from the data. Given this, we will abandon this separation as an axiom of the theory, and will see if it can be dispensed with.

1.3. *All Syntactic Projections must be Phonetically "Visible"*

If we are to take this restricted notion of Universal Grammar seriously, the analyses we propose and the structures we posit must be in some sense learnable. This puts a strong requirement of visibility on any element of the representation which is not already present as part of the endowment of Universal Grammar. To a fairly large extent, the invocation of empty elements with various properties, or of the erasure of empty elements, or of operations holding at Logical Form, a level which we have only very indirect access to, must be viewed as a sort of Deus ex Machina.[11] They are more the artifact of incomplete analyses than of the language faculty of humans. Before this innate faculty is complicated by the addition of, in some cases, language specific representations, the linguist must show that no other visibly available grammatical principle can account for the data. In other words, these phantom elements and operations must be shown to exist beyond a shadow of a doubt by first demonstrating that there is no other, more restricted, way to account for the data.

Tait and Cann (1990) propose a principle of Phonetic Form Licensing which serves to restrict the set of representations available, and to restrict the set of grammars which can be induced by a learner. This principle operates by requiring the head of every syntactic projection to be connected in some principled way with material with phonetic content[12].

PF-Licensing Principle: A local tree domain alpha must be PF-licensed, where alpha is PF-licensed iff:

a. the head of alpha contains phonetically realised material[13], or

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[11]That is, they correspond to devices employed by the linguist to capture the data rather than to true explanation.

[12]By 'phonetically visible' I of course mean visible before the application of any "fast speech" rules.

[13]Cann prefers "phonologically licensed material" in order to account for zero morphemes, which can be taken to have (morpho)phonological content. It is possible to adopt the stronger, phonetic, version if we conclude that there are no zero morphemes, and derive their interpretation by a general semantic rule which is available to Universal Grammar. So, for example, the zero-morpheme associated with third singular agreement in Lakhota would be replaced by a general rule of interpretation that treated an unexpressed argument as a semantic

b. the head or the specifier position of alpha is bound by a PF-licensed position, or

c. the specifier position of alpha is phonetically realized.

This restricts the learner to only posit X-bar projections for those categories with overt morphology. So, for example, a learner of English would have no evidence for positing an Object-Agreement Phrase, and thus would be prevented from doing so by this Principle. This provides a partial solution to the problem raised by Iatridou (1990). She points out the problems implicit in an adoption of Pollock's analysis of Head Movement of minor categories for Universal Grammar. If such elements as Agreement Phrase, Negative Phrase, etc., are syntactically present, how does a learner deduce which elements are syntactically present in the language they are acquiring? Learners of French (Chomsky, 1988) must have access to an Object Agreement Phrase which dominates VP, thus only triggering morphological object agreement on participles in cases of object movement through [SPEC, OAgrP]. Learners of Luganda must have access to an Object Agreement Phrase with properties which place morphological object agreement in complementary distribution with overt lexical object NPs. There are three possibilities:

i. All possible projections are universally present.

ii. The learner chooses the projecting categories from a set of possible categories present in Universal Grammar, based on whether or not an analysis warrants their appearance.

iii. The learner deduces the syntactically active categories based on the overt data available to him or her, without recourse to postulating different analyses and comparing them to decide which is preferable.

Iatridou dismisses (i) as placing too great a burden on the language user. She then adopts (ii). If an analysis depends on the existence of one of these categories, then it is present in that language, whether or not it ever has any overt morphological content. (iii) only requires the

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variable bound by an existential quantifier. The reference of this variable could then be established (or not, as the case may be) by composition with the rest of the syntactic, or discourse, representation.

learner to have access to strings of the target language, and not to possible analyses. This is the PF-Licensing Principle.

As is the case with all narrowly constrained theories, falsifying evidence is fairly easy to find if it exists. One of the drawbacks of adopting a powerful theory as the null hypothesis is that an excessively powerful theory is extremely difficult to disprove. The only way to supersede such an analysis is by comparison with an analysis which is more elegant, or constrained, in some way.

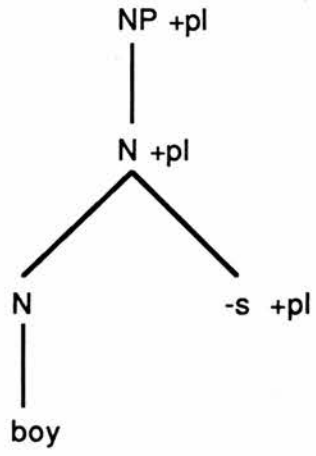
The structure of this thesis is as follows. In Chapter Two I review some of the proposals that have been made thus far in terms of what information it is necessary to represent in the lexicon, and how it should be represented. In Chapter Three I present an analysis of the content of lexical entries in terms of trees, and propose various tree unification analyses of some examples of derivational morphology. In Chapter Four I review the proposals of Pollock (1989) and Chomsky (1988) concerning the syntactic projection of affixes. In Chapter Five I present an analysis of passive which is consistent with the assumption of this thesis that all transparent concatenation is syntactic. In Chapter Six I present some discussion of the status of specifier positions and present an analysis of raising to object based on the conclusions reached. In Chapter Seven I further consider the PFLP as a constraint on learnability and consider the predictions it makes for the analysis of relative clauses. In Chapter Eight I redefine barriers relativized to position and parametrized through the properties of L-marking. In Chapter Nine I consider the interaction of syntactic affixation and case transmission in Labrador Inuttut, and in Chapter Ten I consider syntactic affixation and agreement in Lakhota. Throughout these chapters, I adopt the minimal syntactic analysis licensed by the PFLP, and do not rely on any LF-devices.

Chapter 2. The Interaction of Morphology and Syntax

The interaction of morphology and syntax concerns itself for the most part with how to transmit the information associated with lexical items to syntactic representations, and how further to suppress some information available to the lexicon from the syntactic representation.

2.1. Lexical Information Structures

Much has been assumed about the structure of information in the lexicon, and about the availability of the information in the lexicon to the syntax, but little has been formalized. Leaving aside questions of phonological information, let us take a closer look at the types of information the lexicon must make available to the syntax. In this area, the lexicon is subject to two opposing forces, (1) the Lexicalist Hypothesis, which constrains the amount of access the syntactic component has to lexical/morphological structures, and (2) the need to project certain kinds of information from the lexical representations to the syntax. The Lexicalist Hypothesis states that the syntax may not make reference to, or in some other way modify or involve, the internal structure of words (Chomsky 1970). Words must enter the syntax as atoms. The problem, here, is that words must take with them into the syntax certain types of information that are represented internally, such as tense, agreement, passive morphology, etc. As these have implications for the distribution of words in syntactic configurations, this sort of information must be available. The most common way around this difficulty has been to assume a percolation of features from the morphemes to the dominating X^0 node. Consider the following tree (from Di Sciullo & Williams 1987; p 49):



The affix *-s* is associated with the feature [+pl], which percolates to the head N, and from there to the dominating NP. The protocol associated with such feature passing is not yet fully articulated in the Principles and Parameters model, but in these cases follows from some definition of head of a word.[1]

Another sort of information which must be projected from the lexicon is the argument structure of verbs. In some cases, these argument structures are modified through derivational affixation. I return to this issue in some detail later.

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[1]In general, the rightmost element is head, and given successive cycles of affixation, each suffix functions as head for a time, and can transmit its featural information during that time, before it is replaced by a successive affix. Clearly, however, this system breaks down in languages with extensive prefixation, and must be modified, as well, for languages such as Spanish (Jaeggli 1980) which has a diminutive suffix which can attach to a number of different categories, and thus cannot itself, though head, determine the category of the complex word. This data has required the introduction of the notion 'relativized head', defined by Di Sciullo & Williams as the following:

Definition of "$head_F$" (read: head with respect to the feature F): The $head_F$ of a word is the rightmost element of the word marked for the feature F. (D S & W 1987, p 26).

Once such a step is made, no general algorithm can be said to exist to determine feature percolation, and the right results are obtained by annotation by hand.

It has been noted, particularly since Chomsky (1970), that deverbal nominals maintain an argument structure very similar to that of the related verbs. This has also given rise to the insight of X-bar Theory that the structure of NP's and of S's is very similar. We see this arising in several ways; (1) the Specified Subject Constraint referred both to subjects of sentences [NP,S] and to NP's in determiner position in noun phrases; (2) NP and S were bounding nodes for subjacency (this is a development of 1 historically); (3) many languages use the same case to represent sentential subjects and possessors (this is most commonly the case in languages with ergative/absolutive case marking); (4) sentences often function as arguments within sentences, as in sentential complements, and in many languages, free relatives or internally headed relatives; and, (5) often, NP's are used in place of sentences, as in

(1) I asked the time.

(2) I asked what the time was.

These examples, from Grimshaw (1979) illustrate an NP which can fulfill a propositional theta-role. Interestingly enough, these are all examples of free relatives.

(3) I asked her name.

(4) I asked what her name was.

(5) I know the time.

(6) I know what the time is.[2]

It has been difficult in Government-Binding theory to elegantly capture this structural symmetry between NP and CP, though several researchers have discussed it (Pesetsky 1982). I return to this topic in some detail later.

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[2]The fact that these examples are all free relatives to some extent weakens the significance of supposed similarities between NP (or DP) and CP. The significance then rests in the possible structure which embeds a sentence in a NP with an empty head. See Chapter Seven for further discussion.

Let us consider, then, the sorts of information structures that have been assumed as part of the lexicon/morphology.

2.1.1. Subcategorization Facts

In Chomsky (1965) subcategorization information was represented in the lexicon. This took the form:

hit [+__NP^Manner, . . .]

walk [+__Manner, ...]

Chomsky (1965) p. 167

The subcategorization information represented the sort of VP the verb could head. The subject did not appear in the subcategorization frame. As Chomsky pointed out, although the syntax could make do with context-free rules (Phrase-Structure rules), the lexicon must include context-sensitive rules. This distinction may seem unimportant in the light of the generative power of the other sort of syntactic rule, transformations, but it is relevant to the question of the organization of information in the lexicon. This information is necessarily relational and thus context sensitive. Chomsky also assumed the existence of a set of syntactic redundancy rules which specified certain sorts of implications. One example of this would be the implication that if a verb such as *hit* took an NP and a Manner expression, it could also just take an NP, without the Manner expression. However, if in an entry like that for *walk* the verb appeared without an NP, just with a Manner expression, it is not possible to insert an NP. This gives rules something like:

if NP^Manner then NP

More recently, interest in subcategorization has been reflected in the development of Theta Theory, which has attempted to account for the semantic relationship between certain argument slots of a verb, and the arguments which appear with it in the syntax. Crucially, however, Theta Theory allows the verb to assign a theta-role to its subject, that is, to the argument external to the maximal projection of the verb. This diverges from subcategorization

frames, in that they only specified the arguments or complements a verb could take within its maximal projection. The other major divergence is that the subcategorization frames used in *Aspects* did not limit themselves to the obligatory complements of verbs, but included any modifiers that might appear with in a projection of the verb, such as the Manner expressions in the examples above. The Theta-criterion only applies to arguments which can be considered to be obligatory.[3]

Theta Theory also includes much of what were distinguished from subcategorization as selectional restrictions. These imposed certain features on the arguments of verbs such as [+/- animate, human, mass, count]. These differed from the subcategorization frames in that they held of the subject of a verb, so that a verb could selectionally restrict its subject to be +animate, for example *recognize* must arguably take a cognizant subject. This information has been subsumed into theta-roles as there is an implication, for example, that if a verb takes an external argument that is an experiencer, the major category realizing that theta-role (usually NP) must be animate.

The recognition and elimination of redundancy has been a feature of research into the lexicon for some time. It was early recognized that there was a great deal of redundancy between the individual entries for verbs assumed in *Aspects*, where the subcategorization frames specified the syntactic categories of the complements, and the phrase structure rules (branching rules) of the syntax that specified the constituents of a well-formed VP (to continue using V as an example). That is, not only were there hundreds of verbs subcategorized to take an NP direct object, but there was also a Phrase Structure rule expanding VP as V^NP. If the lexicon and the syntax are to be kept rigidly distinct, yet must share large amounts of information, then duplication of information has been difficult to avoid. This redundancy has been approached in various ways. One of the more recent approaches (Speas (1990), Stowell (1981)), which feeds directly into the line of research reported herein, is to remove Phrase Structure rules from the

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[3]There is a great deal of confusion on this point. Initially Theta Theory was held to apply to obligatory arguments. However, recent extensions have allowed much more diversity of theta-marking, and of possible theta-markers. Any modifiers may now be considered to assign theta-roles to their modificands. In this sense, Theta Theory has been extended to include the representation of any sort of semantic relationship between two elements in a sentence.

syntax, and to project the needed constituent information from the lexicon. Independent principles of the grammar add the needed bits to get well-formed syntactic trees.

Another line of research devoted to reducing redundancy has been concerned with the expression of theta-roles in the lexicon. It has been noted that rather than specifying the categories (syntactic) which a verb could subcategorize for it should be possible to subcategorize for the role itself, and then to assume a canonical syntactic expression of this role. The role 'agent' will canonically be realized as an NP, the role 'proposition' will canonically be realized as a sentential complement. A rather neutral role such as 'theme' could canonically be realized as either.

2.1.2. The Information Structure of Affixes

Affixes, particularly derivational affixes, must also have various types of information associated with them. There are three main types of information which affixes must have encoded with them in the lexicon; (1) categorial information, both for combination and for result; (2) argument structure; and (3) idiosyncracies of application. I will deal with each of these in turn.

Categorial information

Affixes are generally limited as to the category of the word to which they can apply. *-ness*, for example, can only apply to adjectives. *Happy, happiness, friendly, friendliness*, etc. Frequently, the affixation of such a morpheme will also change the category of the word to which it has applied. *-ness* affixes to an adjective to produce a noun. Because of this two-way relationship to categorial information of these affixes, researchers (e.g. Hoeksema 1986) have suggested treating morphology in the notation of categorial grammar. The basic insight of categorial grammar is that constituents can be built up by certain types of combinations of constituents. Rather than state this in the form of phrase structure rules such as:

VP -> V NP

The verb is given the category of something that combines with a NP to yield a VP. The lexical category of the verb itself is not important, just its combinatorial possibilities are listed in the lexicon. Thus are verbs of different valency distinguished. If we represent the category of a

transitive verb as VP/NP (the output is to the left of the slash, the input to the right), then we would represent the category of a ditransitive verb as VP/NP/NP. In this way the information that would otherwise be encoded in the phrase structure rules is encoded in the lexicon in the lexical entries. From this, one of the weaknesses of categorial grammar emerges, it makes generalization over the constituent form of the grammar rather difficult.[4]

Derivational morphology is particularly conducive to a categorial treatment, inflectional morphology is somewhat less so. As inflectional morphology traditionally and typically does not change the category of the word or stem to which it applies, the categorial information it encodes, at least as far as the major category features [+/- N,V] is not interesting. The categorial effect of inflectional affixation is felt at a finer-grained level of categorial features, things such as [+/- past, plural, neuter, etc]. At this point, categorial morphology becomes nothing more than a notational equivalent to a system of feature percolation, not particularly any more elegant than any other system.

Head of a word

In order to capture the generalization that, at least in English, category-changing affixes tend to be suffixes, and that all inflectional morphemes are suffixes, Williams (1981b) proposed an importation of the notion of head of a constituent from X-bar syntax into morphology. Assuming a tree representation of morphological structure as in Selkirk (1982), he proposed that the headedness parameter of words be strongly rightmost. That is, that the rightmost morpheme in a word is its head. This was taken to be a feature of universal grammar, and not a domain of parametric variation. As almost all category-changing affixes are suffixes, they are to be

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[4]Recent attempts in Government-Binding Theory to reduce, if not remove, the role of phrase structure rules can be seen as an attempt to import a sort of Categorial Grammar into GB. As in GB, categorial grammar projects the syntactic constructions from the lexicon, in the case of Categorial Grammar, from the categories of the words themselves. This current line of research in GB attempts to replace Phrase Structure rules of the X-bar form with projection of lexical and functional categories from the lexicon. I will return to a discussion of this trend of research in GB later, but will not attempt to draw further parallels with the research paradigm of CG.

entered in the lexicon as bound morphemes of that category, (i.e. *-ness* is a noun, *-ate* is a verb, etc). Then, just as in compounds where the rightmost element determines the syntactic category of the whole, the category of the rightmost morpheme determines the category of the composite word.[5] This assumes a cyclic interpretation of affixation, with each affix, following the root, being the head for one cycle. It is during the cycle where a morpheme is the head that it is important for syntactic considerations. In more recent work (Di Sciullo & Williams 1987) Williams has modified his claim for headedness in words to a notion of relativized head. In this system, each morpheme in a composite word can be the head relative to some feature.[6]

Again, we arrive at an essentially feature percolation account for passing information from the 'head' morpheme to the superordinate category. With the weakening from 'head' to 'relativized head' the notion of 'head' as a privileged segment has been lost, and all that is encoded is instructions for feature passing from a segment to the mother node.[7]

Argument Structure

The second type of information which must be represented for affixes is the sort of argument structure they take, or any changes they might make to the argument structure of the string of morphemes they affix to. This sort of information does not serve to distinguish bound morphemes from free ones, as argument structures (or theta-grids) are a feature of the

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[5]Grimshaw (1986) argues that it is this notion of head of a word that accounts for the Mirror Principle effect (Baker 1985), adapted from the Satellite principle of Gerdts . If you assume that a morpheme is syntactically relevant only when it is the head of a word, then the Mirror Principle effects fall out.

[6]This of course, greatly weakens the strength of the claim for right-headedness in words. Evidence from Arabic (Jim Hurford, personal communication) and from Squamish (Deusch 1989) indicate that the directionality of the head of a word as a universal is seriously flawed. In Arabic, all compounds are left headed. In Squamish, many derivational category-changing affixes are prefixes.

[7]A syntactic solution may offer some hope here, with its already clearly-defined notion of syntactic head, which gives largely the result we want. If independently required principles of syntax can be extended to produce both the Mirror Principle effects, and to represent the appropriate government and headedness relationships, then a further strong argument will be adduced to incorporate much of morphology into the syntax.

information structure of them as well. The same is true in terms of the information relating to category. The difference with respect to these two types of information represented in free and bound morphemes is that whereas the information associated with the free morphemes is in some sense simple, the information associated with the bound morphemes (in particular, the derivational morphemes) is relational. Categorially, a derivational morpheme is a mapping from one category to another, as *-er* maps from a verb to a noun. In terms of argument structure, bound morphemes map the argument structure of a free morpheme (stem) to the argument structure of the complex word. In some cases, particularly that of inflectional morphemes, that mapping is identity. In the case of derivational affixes like *-able*, or *-er*, the mapping is not vacuous, as argument slots may be reordered, or filled.[8] In the case of passive, or, in other languages than English, causative, argument structures are more significantly altered by the addition of such an affix. Another interesting distinction between inflectional and derivational morphemes with regard to argument structures in English is that inflectional morphemes vacuously map argument structures or theta grids, and do not affect their relationship to the Projection Principle. Derivational morphemes generally produce a non-vacuous mapping, and as a result the theta-grid or argument structure which is produced is not subject to the Projection Principle. The arguments become 'implicit', in the wording of Roeper (1987). I return to this in a later section.

The distinction between bound and free morphemes has played a large role in the development of English linguistics: bound morphemes are covered by one section of the grammar, Morphology; free morphemes are covered by a different section of grammar, Syntax. However, moves toward cross-linguistic coverage show this distinction to be an arbitrary one from the perspective of Universal Grammar. Elements with the same functions are thus subject to one system of grammar in one language, and another in another language. This is the distinction between isolating languages such as Chinese, which in effect have no active morphology, and highly synthetic languages, such as Navaho or Turkish, which have very little Syntax. It might seem more reasonable to view the distinction between bound and free morphemes as a

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[8]For example, the analysis of Williams which equates the resultant noun with a theta-role of the verb stem, assigning it the referential index R.

reflex of properties of PF, and not as reflecting a fundamental distinction between modules of grammar.

Idiosyncratic Application

Finally, and least interestingly, morphological rules are noticeably less productive than syntactic rules. Lexical exceptions exist to nearly every morphological rule. This information must be encoded somewhere in the lexicon. Researchers have suggested four major alternatives; (1) Encode it in the representation of the stems, in the form of a list of the affixes they can or cannot take; (2) Encode it in the representation of the affixes themselves, listing all the morphemes they can affix to. As bound morphemes can affix to other bound morphemes, this approach seems superior to the previous one, as you would have to state for any stem, every possible sequence of affixes it could take, a non-local restriction. If you represent this information on the affixes themselves, your restriction is strictly local, but as affixes are generally a closed class and stems are an open class, you will encounter two problems. (a) When new words enter the language, there will need to be a procedure for adding them to the specifications of any affixes they can take, (b) As open classes generally contain many more items than closed ones, you will have much longer lists going this way. A stem may take only five or ten affixes, but an affix, particularly a productive one, will affix to a multitude of stems; (3) Following Halle (1973) many researchers have assumed that all affixes are completely productive (providing their categorial requirements are met) but that a filter exists that filters existing from non-existing words. That is, the morphological rules are as productive as syntactic rules, but there is a distinction between potential and existing derived words. The question of the relationship between morphological and syntactic rules is a complicated one, which I will return to in a later section. By this relationship, I do not refer to a relationship with respect to a derivation, but to a theoretical relationship as objects of a grammar; (4) The final proposal is closely related to the previous one. Linguists developing it (Lieber (1980)) have assumed that the lexicon is a pre-expanded list, and that morphological derivations, rather than being 'on-line' in some sense, just parse existing words.

This sort of information is least interesting from the point of view of the line of research which I pursue herein as it must be purely stipulative. There is no principled way to deal with lexical exceptions. They must simply be represented at some level of the grammar. How they are

represented is not important, and generally speaking, no suggestion for their representation is much more satisfying than any other.[9]

2.2. The Role of Morphology in the Grammar

Recent interest in the role of morphology in the grammar has focussed on a desire to use lexical information to derive sentential relations. As was noted earlier, there is a good deal of overlap between a syntactic representation of the structure of verb phrases, and a lexical specification for any verb of what arguments must appear with it within its maximal projection. I will argue in this thesis that there is a logical extension of the notion of levels of syntactic representation that posits the existence of a level at which lexical structure interacts with X-Bar Theory and with principles of tree adjunction (cf Joshi 1987), and unification (cf Zeevat, Klein and Calder 1987) to produce the level of syntactic representation which has been considered as D-Structure.[10] Conceptually, I will be arguing that just as S-Structure is derived from D-Structure by the application of certain rules, i.e. Move alpha (applied to XP), so is D-Structure derived from lexical structure (i.e., lexical entries) by the application of a rule of unification applied to local trees. I will further argue that certain principles which have been considered to operate at either D-Structure or S-Structure actually are best interpreted as holding at lexical structure. Any non-structural case is assigned at lexical structure.

2.2. *Argument Structures and Morphology*

In this and the next section I discuss two important papers in the development of syntactic operations on lexical structures. The first paper I will consider (Williams 1981) deals in

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[9]The role of sociolinguistic factors relating to standardization and the existence and validation of dictionaries is not very well understood in relationship to this issue. Certainly, one hears many spontaneous examples of productive affixation, e.g. *the improval of the situation in the Gulf.* (BBC News), *the assignation of case,* (student essay). That is, it may be that some syntactically well-formed words are filtered not by the grammar, but by the (linguistic) superego.

[10]It is possible that there is an interpretation of lexical structure which corresponds to the interpretation of D-Structure in recent works by Rizzi. That is, under the minimal representation of Rizzi, the unification of lexical structures IS D-Structure. If this argument holds, this represents a way of settling the debate as to the existence of D-Structure.

particular with establishing a notational system to represent alternations to the argument structure of lexical items. The second paper (Roeper 1987) considers much of the same material, but introduces structural representations of the lexical operations.

Williams (1981a) proposes an account of argument structure modification under certain morphological processes. He defines a very limited set of possible rules affecting argument structures, which he refers to as "Externalize X" and "Internalize X". He claims that this set of two is exhaustive and universal, and that it is a general feature of morphological rules that they can only affect the external argument of a word.

2.3. The Definition of External Argument

In a previous paper Williams (1980) defines the external argument as an argument which is realized outside of the maximal projection of the head which governs it. In Williams' analysis of the predication relation he assumes that the predicator and the predicatee are coindexed, and that a maximal projection can bear only one such index. This guarantees that there will be only one subject for each maximal projection. This distinguishes the external argument from the internal arguments, which are realized syntactically inside the maximal projection of the head which subcategorizes for them. If an internal argument is moved at some level of syntactic representation it leaves a trace behind in its original site. (With original site being defined recursively for each successive application of a movement rule). Further, Williams' definition of coindexing under predication requires the subject to c-command the maximal projection which it is coindexed with. The internal arguments are assumed to be an unordered list. Therefore, Williams replaces a characterization of grammatical relations with a simpler distinction between external and internal argument. By replacing a representation in terms of grammatical relations, which mediates between thematic roles and syntactic realization, with a representation which annotates the thematic role specifications for lexical items with an indication of which is the distinguished, or external, argument, Williams claims that he has simplified the grammar.

The notation which Williams uses is based on Gruber's (1976) labels (actor, theme, goal, source, etc), a subcategorization frame-like list, and underlining to distinguish the external argument.

hit : ([Actor], theme)

(Williams 1981a, ex 2, page 83)

Raising verbs, like *seem*, *appear*, etc., have no external argument. In the following example, *John* is subject by virtue of binding a trace within the VP, and so is coindexed with the VP.

(12) John seems to be happy.

2.4. External Arguments of Nouns

In the cases of nominalizations, a slight problem emerges in that the actor of a nominalization is realized inside the maximal projection of the noun.

(13) NP[[the enemy]'s destruction of the city]NP

In this example *the enemy*, the actor of the destruction as carried over from the argument structure of the verb *destroy* occurs in specifier position in NP. This would appear to contradict Williams' analysis. However, Williams argues that the external argument of a NP is actually a referential argument, as seen in examples like the following:

(14) I consider that [destruction of a city by evil forces].

(15) John is a fool.

(Williams 1981a, ex. 9,10, page 86)

In first the example above *that* is the external argument of the noun phrase in square brackets. It is outwith the maximal projection of the head noun, *destruction*. In the second example, *John* is the external argument of *fool* and is again in the c-command relation required for a subject. Therefore, the argument structure for the derived nominal *destruction* is:

destruction: ({R}, actor, theme)

2.5. Syntactic Realizations

Williams next turns to the question of how it is determined which NPs in a sentence realize arguments of which lexical heads. In terms of the external argument, he proposes the following two language universals.

> If there is an Actor, it must be external for V.
>
> R must be external for N.
>
> (Williams 1981a, ex. 11, page 87)

Rather than posit realization rules for each argument structure for each lexical item, Williams invokes general realization rules of the following sort.

> Theme : (NP)
>
> Goal : (NP, PP_{to})

or for a language with morphological case

> Goal : (NP_{dat})

The notation for these rules utilizes the format:

> A : (X_y, Z_w)
>
> where X and Z are major categories,
>
> y and w are prepositions or case features, and
>
> A is an argument type.
>
> (Williams 1981a, p. 88)

These rules are meant to be verb-independent, and thus will apply to any verb which has arguments meeting their structural description. Williams lists the following realization rules for English, along with examples.

Actor : (NP, PP_{by})	John was seen by Bill.
	The destruction by the army
Actor : (NP, PP_{of})	The shooting of the hunters
(limited to NP)	
Goal : (NP, PP_{to})	to give to John
	the gift to John
Goal : (NP_2)	give Bill the book
Theme : (NP)	hit Bill
Theme : (NP, PP_{of})	the destruction of the city
	deprive Bill of money
	aware of the accident
	speak of something
Source : (NP, PP_{from})	arrive from Houston
	the arrival from Houston
X : (NP_{poss})	

> Most of these are self-explanatory. The last one says simply that a possessive NP may bear any relation whatever to the head noun; this is a great exaggeration, but it is a first approximation that is difficult to improve on. (Williams 1981a, p. 88-9)

Although these are written in the notation employed by Chomsky for grammatical relations Williams clearly distinguishes them from such. That is, the entry for the first Actor above is read "the actor is realized by the NP dominated by a PP_{by}." Williams claims these are

distinguished from grammatical relations in that a theory which employed grammatical relations would have to have a dual representation, grammatical relations and thematic relations. Williams' specially notated thematic relations (the use of the distinguished external argument underline) limits the representation to a single, complex one. This is claimed to simplify the grammar.

Williams relies on the use of subcategorization frames to limit the over-application of these realization rules.

2.6. Externalize X and Internalize X

Williams defines this operation universally as:

> Externalize X or E(X)
>
> Erase the underline on the external argument, if there is one, and underline X. If X=0, then underline nothing.
>
> (Williams, 1981a, p. 92)

If X is not specified in this rule, then no external argument is created, and thus no external argument exists. If some word doesn't have an argument corresponding to X, then this rule is undefined for that word, and can't apply.

Williams gives for example the rule 'E(theme)'. He considers two types of its application in English, (a) *-able* affixation, and (b) the formation of adjectival past participles. The rule for *-able* affixation Williams gives as:

> E(th): read ([A], th) -> readable (A, [th])
>
> (Williams 1981a, p. 93)

Williams remarks that it must be the theme that is externalized by *-able* affixation, as you don't get examples such as *that man is runnable.* However, his choice of *read* for his example seems an infelicitous one, as arguably this affixation is not an example of productive *-able*

affixation, as it does not allow the expression of the actor (or former external argument) in a *by* phrase.

*This book is readable by John.

This problem is solvable by first-year undergraduates.

A further indiction that *readable* may be lexicalized is the fact that its meaning is not compositional. It does not mean *capable of being read* but rather *enjoyable,* or *easy, to read.* Semantic drift of this kind often accompanies lexicalization of formerly multi-morphemic words.

2.6.1. Adjectival vs. Verbal Passives

Williams (following (Wasow 1977, 1978)) gives the following criteria for distinguishing between adjectival and verbal passives. (a) Adjectival passives permit the prefixation of *un-*, (b) can be fronted by WH-movement, and (c) always have a theme subject. Verbal passives, on the other hand, do not permit *un-* prefixation, cannot be fronted by WH-movement, and can have theme, goal, or source for subject. Therefore, adjectival passives are only the result of E(th) and involve no NP movement, and thus have "no interesting syntactic component to their description." (Williams 1981a, p. 94). Williams claims that verbal passives cannot be the result of the application of a morphological rule alone, as the argument of the externalize function displays no thematic constancy. Therefore, it cannot be analyzed as the output of E(X) as X has no fixed value. Verbal passives must be analyzed as the output of the rule E(0) or E().

E()

Erase the underlining in the argument structure giving an argument structure with no external argument.

(Williams 1981a, p. 94)

The application of this rule maps this class of verbs onto the class of verbs with inherently no external argument. This class includes the so-called raising verbs like *seem, appear.*

The account as it stands so far would predict the grammaticality of:

(13) It was seen Bill by Fred.

(Williams 1981a, p. 94)

Williams blocks the above example by stipulating that the passive verb does not assign case. Thus the direct object, *Bill*, must move to the subject position in order to receive case from INFL, or be blocked by the Case Filter. This analysis is extended in Fabb (1984).

Therefore, verbal passives are distinguished by two features, (a) they are the result of E(), and (b) they do not assign case.

2.6.2. Internalize X

Internalize X, or I(X), is the other operation available on argument structures. It adds an argument to the structure, necessarily an external argument, and internalizes the former external argument. It appears in English in causatives and nominalizations.

Internalize X (I(X))

Def: a) set the external argument of the input word "equal to" X in the output word.

b) add a new external argument, A for verbs, R for nouns.

(Williams 1981a, p. 99)

The suffix *-ize* is an example of the operation of this rule.

I(th): random_{A} ->randomize_{V} ({A}, Th=Th)

(Williams 1981a, p. 99)

In this case, the 'Th=Th' notation indicates that the old external argument of the adjective *random* was its theme argument, and that according to the application of the rule I(Th) the old theme has been set to equal the new theme (however, it is no longer the external argument).

Other examples include the suffixation of causative *-en*, and the relationship of intransitive *melt* to transitive *melt*.

2.6.2.1. Nominalizations

The nominalizing suffix *-ing* is an example of the application of either I(Th) or I(A). These are illustrated below:

I(Th) : growl_V ({A}) -> growling_N ({R}, Th=A)

the growling of the lions

I(A) : growl_V ({A}) -> growling_N ({R}, A=A)

the growling by the lions

(Williams 1981a, p. 101)

Thus, we see that Williams posits the existence of two separate rules applying to *growl* involving the addition of an external argument and the suffixation of *-ing* in order to preserve an isomorphy between prepositions and thematic roles. It is very doubtful that this can be maintained. Williams notes that his analysis predicts that intransitive verbs with external themes, as for instance *melt*, should be able to undergo *-ing* affixation through the application of I(A). This would produce such examples as:

(14) The melting by the snow

(Williams 1981a, p. 101)

Williams suggests no solution to this problem.

2.7. Why No Other Rules Are Needed

There are two constructions in English that might at first glance appear to offer a counter example to Williams' claim that no rules are possible which do not make reference to the external argument (and further, that E(X) and I(X) are the only possible rules for manipulating

argument structure). These are the dative shift examples, and examples involving detransitivization.

2.7.1. Dative shift

The examples of related sentences exhibiting 'dative shift' may be thought to provide a counter-example to Williams' claim that it is impossible to have morphological rules affecting argument structure which do not involve crucially the external argument.

(15) I gave the book to John.

(16) I gave John the book.

The former example is generally taken as the base structure, with the latter the derived sentence. *the book* is considered to be the direct object of *give*, with *John* the indirect object. The effect of dative shift is thought to be to shift the dative object (*John*) to the position between the verb and the direct object, removing the preposition. The external argument of *give* is *I*, the subject and actor, and it is ostensibly not affected by the shifting about of the direct and indirect object. Thus, a potential counter-example. Williams cites Oehrle (1976) as providing evidence that this alternation is not the result of a syntactic rule and therefore must be lexical. Williams claims it cannot be lexical because it is not a result of applying either E(X) or I(X). Williams claims that verbs in English have subcategorization frames that realize their Goal argument as either NP_2 or PP_{to}. In some cases, verbs may have a choice between the two possible syntactic realizations. This bifurcation in the lexicon explains why there is no dative-shift affix in English. If it were the result of a morphological rule, there would be an affix to mark the application of that rule, if it is merely the result of a choice-point in the subcategorization frame, there need be no affix.

2.7.2. Detransitivization

The term 'detransitivization' refers to the relationship between such pairs as *eat* and *eat something*. Williams solves this in the same way he solves the dative shift pair. He claims that the subcategorization frames for these verbs which allow an 'optional' direct object have that direct object represented in the frame as being in parentheses. He points out the difference

between the verbs *put* and *position*. *position* allows the indirect object, or locative object, to be missed out.

(17) He put the dress on the rack.

(18) *He put the dress.

(19) He positioned the dress on the rack.

(20) He positioned the dress.

Therefore, the subcategorization frames for *put* and *position* would be identical in calling for a direct object and a locative PP, but in the case of *position* the locative PP would be in parentheses, indicating its optionality.

2.7.3. Subcategorization Frames

The subcategorization frames Williams is assuming are essentially those of Chomsky (1965). The subcategorization frame for a head determines its complements in the syntactic trees. Williams also assumes that there are marked and unmarked choices, sometimes referred to as 'ranked'. These choices refer to either realization types (eg. Goal as PP_{to} or NP_2), and to degree of optionality or obligatoriness. They also reflect case or preposition choices for the individual lexical items.

2.3. Evidence for Argument Structure in the Lexicon: Nominalizations

Roeper (1987)[11] considers evidence that the theta-grid of a verb is preserved under certain morphological rules, even though the Theta Criterion fails to apply to deverbals in the same way it applies to verbs. That is, these verbs maintain the information in their theta-grids under affixation, but the thematically marked arguments are rendered "implicit" in that they

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[11]Roeper's contribution to current understandings of morphology is very great. This paper, in particular, underlies a great deal of the analysis in this chapter, though certain modifications are proposed. Most examples in this section are taken from Roeper (1987).

are no longer subject to the Theta Criterion and can thus lack overt syntactic expression. For example, consider the case of the "agentless passive".

(21) The ship sank.

(22) The ship was sunk.

The passive example contains an implicit agent argument, which can be revealed by adding an agentive *by* phrase.

(23) *The ship sank by Bill.

(24) The ship was sunk by Bill.

Further, the implicit agent of the passive can serve as controller for a purpose clause.

(25) *The boat sank PRO to collect the insurance.

(26) The boat was sunk [PRO to collect the insurance].[12]

In the first example, control is impossible as there is no implicit AGENT available.[13] In the second example the implicit AGENT argument in the theta-grid of the verb controls PRO. This effect is also present in compounds with *-ing*, nominalizations, and adjectives in *-able*.

(27) meat-eating to gain weight

(28) the eating of meat to gain weight

(29) Goods are exportable to improve profits.

---

[12]This contrast first noted in Manzini (1983).

[13]Arbitrary PRO is, surprisingly, ungrammatical in examples such as these, showing that PRO_{arb} is limited in its appearance in Purpose Clauses. It may further suggest that PRO_{arb} is not a subclass of PRO, but is the result of a semantic interpretation rule on a structure, and is thus not an empty category at all.

Roeper goes on to consider the question of how a child/learner can infer the presence of implicit arguments in some instances, but not in others. First of all, he distinguishes the notion of implicit AGENT from any cognitive notion of agency. Consider the following contrast:

(30) *the thief of the bank

(31) the robber of the bank

(32) *the cook of stew

(33) the baker of bread

(34) a taxer of hidden assets

(35) *a taxman of hidden assets

Although *thief* contains a cognitive notion of agency, there is no theta-grid present to license the THEME argument *bank*.[14] In the case of *robber* the verb *rob* has a theta-grid which is maintained under nominalization by *-er*. This theta-grid can then have its THEME argument linked to *the bank* . A similar analysis is available for *taxer* and *taxman*, but in the case of noun-noun compounding the theta-grid of the original verb is not maintained through the zero derivation from the verb *to tax* to the noun *tax*. Roeper further notes that his proposals help to account for the differing behavior of *-able* under affixation.

(36) The grammar is learnable by the child.

(37) *John is reliable by Bill.

(38) The view is defendable by anyone.

---

[14]Interestingly, the relationship of *thief* to the verb *thieve* does not appear to be sufficient to license this theta-grid transmission. I argue that this is the case because the derivation does not involve transparent concatenation, and thus is not a syntactic operation. Theta-role transmission, or preservation, results from head movement in the syntax, and is not a result of the operation of what have been considered heretofore as morphological rules.

(39) *The view is defensible by anyone.

(40) The tower is visible to anyone.

(41) *The tower is visible by anyone.[15]

The productive affix *-able* maintains the theta grid of the verb it affixes to, the lexicalized *-ible* doesn't.[16]

Roeper reviews four different types of approaches to representing this information in the grammar. These are (a) lexical, (b) morphological, (c) syntactic, and (d) inferential (Roeper p. 269). I will briefly summarize his argument.

Lexical: This approach associates the arguments with properties of the verb, listed in the lexicon. Williams (1985) proposes a system in which the thematic grids of a matrix verb and a verb in an infinitival complement are linked. **Morphological**: This approach associates implicit arguments with affixes. Roeper adopts this position in part, arguing that, for example, in passivization the affix *-ed* becomes the head of the word and carries the AGENT role in passive sentences. Williams (1981a) proposes a similar analysis. This position is similar also to the analysis developed in Chapter Three. I will go on to show, however, that associating theta-grid information with affixes and allowing them to head a word is not

---

[15]Consider the following, however, illustrating a cognate form of more transparent affixation:

(i) The tower is viewable by anyone.

This, too, suggests that syntactic licensing is dependent on transparency of derivation.

[16]This evidence bears strongly on the notion of the PF Licensing Principle as a constraint on learnability which I develop in a later chapter. Briefly considered, it suggests that affixes, besides being subject to the constraints on paradigmatic licensing, are further constrained by some sort of phonological transparency condition on their derivation. Historically, then, phonological change can destroy an environment in which PF licensing holds, rendering a form fully lexicalized and no longer subject to syntactic operations. In the example considered above, not only does the suffix appear in the less transparent *-ible* form, but the stem remaining, *vis*, is not a word of English as a free morpheme.

necessarily a morphological approach. **Syntactic:** This approach associates implicit arguments with syntactic positions, e.g., the argument that the determiner position of a nominalization contains a PRO acting as external argument of the verb stem. As with the last approach, the analysis proposed herein also makes use of this position. Thus further questioning the necessity of a distinction between morphological and syntactic processes. Roeper also posits the existence of invisible PPs to act as controller in certain constructions (e.g., *It is possible (for* NP) *to go*). **Inferential:** This approach shifts the bulk of the responsibility for these phenomena onto processes of inference. Roeper provides arguments to show that this approach cannot account for the full range of data he cites and thus is not an adequate account on its own for implicit arguments.

Roeper traces the idea that affixes carry thematic roles to Chomsky (1981), treating it as an extension of the Projection Principle to the morphological component. This proposal is renamed "Full Interpretation" in Chomsky (1986b). I give Roeper's distillation of this argument in full (p. 270):

> The fundamental relation of *government* guides the argument:
>
> A. Lexical *government* (which entails thematic subcategorization) holds between a *Head* and a *complement*.
>
> B. Head and complement bear a sister relation to each other.
>
> C. Affixes are Heads. Those that carry their own *thematic grids* can be called *thematic affixes*.
>
> It follows, then, that if affixes are Heads,
>
> D. Affixes bear a sister relation to a complement (which entails the assignment of thematic roles.
>
> E. The thematic grid of the affix percolates to the new categorial node that it creates.
>
> F. The thematic grid licenses a thematic PP. If no PP is expressed, a thematic role on the thematic grid is an *implicit argument*.

G. Implicit arguments can control PRO under c-command.[17]

Roeper goes on to consider each claim, and to provide evidence to support it. Further, he provides for a system of percolation or feature sharing to account for the interaction of thematic grids of affix and stem. The thematic grid of the affix starts on the "new categorial node that the affix creates, and percolates to the X' node." He adopts "the standard notion of percolation" (Chomsky 1986b, Lieber 1983, Randall 1982; 1984, Sproat 1985) with the following three additions (p. 271):

a. Information on one node can percolate to a categorially different node.

b. Percolation is triggered by a phonetically real affix.

c. The thematic grid of the affix must match the grid of the verb to which it attaches.

He then distinguishes three different kinds of affix (p. 271):

a. Affixes that *match* the thematic roles on verbs (*-able*)

b. Affixes that *inherit* the thematic roles on verbs (*-ing*)

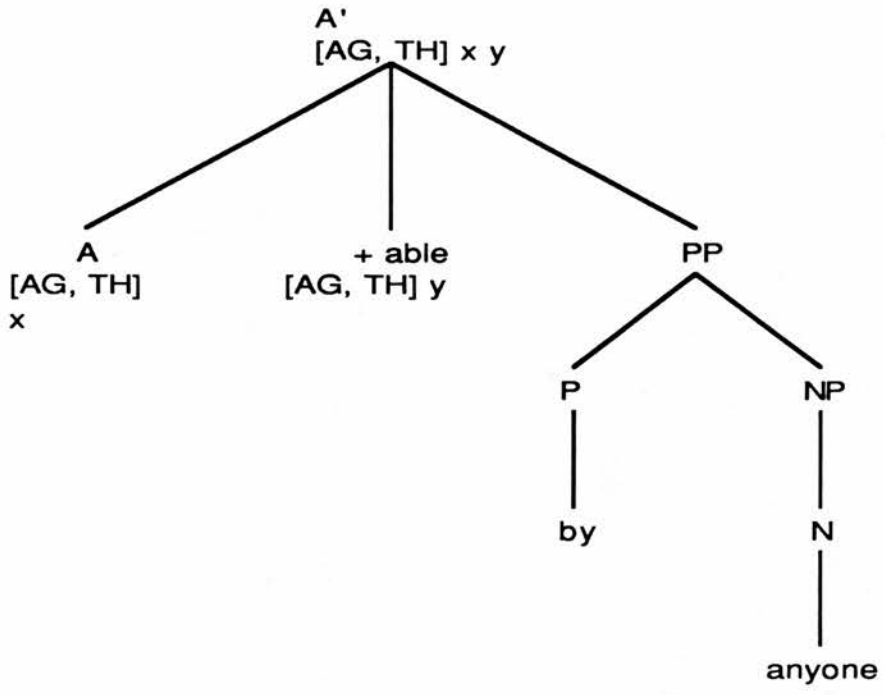
c. Affixes that *block* the thematic roles on verbs (*-ful*)

The first case Roeper considers is that of *-able*, which he claims "requires a transitive input sentence." This claim highlights the vagueness underlying parts of Roeper's analysis. If this is a morphological process, or even under current understanding a syntactic process, how can it take another sentence as "input"?[18] Roeper accomplishes this by stating that *-able* has its own thematic grid (transitive [AG, TH]) which must match that of the underlying verb. Consider the following diagram from Roeper (p. 271).

---

[17]A further consequence of affixes being heads is that they should then be able to undergo head movement in the syntax.

[18]The wording here is suggestive of an early transformational grammar involving kernel strings and transformations which embedded one sentence into another to give relative clauses, sentential complements, etc.



This diagram illustrates Roeper's analysis of *-able*. The analysis I propose in Chapter Three is very similar to this, but manages to remove the many redundancies involved in this account by allowing the affix to select a complement VP and then by deriving the properties of the construction from the general principles of head-movement.

Roeper limits percolation to the X' node by identifying this node as a "thematic bridge", a level at which the expression of thematic roles is determined. The identification of different affixes as belonging to different kinds of affix according to whether they match, inherit or block theta-grid percolation allows Roeper to account for Full Interpretation. Considering the identification of these classes a kind of formalization of the Projection Principle, Roeper argues that simpler views of the Projection Principle fail for the following reasons (p. 273):

> (a) If we allowed a Head-dominated account, where the thematic roles are determined solely by the affix Head, then we could not explain why **comeable* is impossible, since the affix would simply transitivize the verb (producing a causative reading); nor could we explain why *-ing* always matches the content of the verb.

(b) If we allowed pure inheritance from the underlying verb to a higher node, then we would have no real account either for the fact that *-ful* does not allow a thematic grid or for the fact that **comeable* is not grammatical as an intransitive (= *able to come*).

The account which I propose encounters neither of these problems. The ability to select for a transitive or an intransitive VP is assumed by the affixal head through L-selection, just as particular complementizers select for finite or non-finite sentential complements. *-ing* always matches the content of the verb, as does *-able*, with the restriction that the verb be transitive, as it is only the verb which discharges thematic grids. A stronger case would exist for Roeper's account of affixes bearing their own distinct thematic grids if there existed an affix which added a thematic role to that of the verb.[19] The 'blocking' character of *-ful* could suggest that it is not productive in the syntactic sense, and is lexicalized (listed in the lexicon).[20]

Roeper must assume, following Aoun and Sportiche (1983), and Chomsky (1986b), that nominalizations contain a PRO in their determiner position. This predicts the following pair:

(42) The game was played [PRO to prove a point]

where PRO is controlled by the implicit agent of the passive *-ed*,

(43) the playing of the game [PRO] to prove a point

---

[19]The analysis given later of *-ize* is a possible example of this. However, the existence of one (or a few) affixes which do contribute new thematic information does not require all affixes which in some way restrict their complement/stem to bear their own thematic grid. This position could be seen as extending Roeper's category of 'inheriting' affixes to include those he considers as 'matching'.

[20]If further evidence did not exist for treating this affix as lexicalized, it could be treated as taking only a bare V complement, thus inheriting no thematic grid. Or as taking an intransitive verb as complement, thus allowing the subject of which *playful* is predicated to discharge the AGENT theta-role of *play*. This analysis encounters the problem that in the case of *pitiful* the subject takes the theme theta-role of the transitive verb *pity*. Alternatively, therefore, it may be that *-ful* attaches to a noun produced from a verb by zero derivation, which does not preserve theta-grids. Further evidence supporting this lies in the fact that *-ful* does also apply to nouns, e.g. *joyful, gleeful.*

where PRO is controlled by the PRO in determiner position.[21]

Roeper then proposes the following two principles to account for the control properties of pairs such as the above:

> Control occurs whenever subjects are in a c-command configuration. (p. 278)
>
> The Foot of a control chain must be PRO at Logical Form. (p. 279)

This analysis predicts, then, that Dethematization in the Passive cannot occur until after D-Structure as if it occurred in the lexicon there would be no subject AGENT at D-Structure. A syntactic analysis of this sort gets around the problem noted by Chomsky (1981) in that Dethematization, Case Absorption, and *-ed* Affixation must be marked as linked in the lexicon. This distinguished linking is without explanation in the grammar, and must be stipulated.[22]

Roeper then reinterprets the Theta Criterion as applying only to the assignment of theta-roles, and not to the representation itself. Only one assignment of a theta-role can occur to any argument position, but a theta-role can occur more than once in a representation, as in Roeper's case in the theta grids of stems and affixes.

A further point of interest in Roeper's paper concerns bare nominalizations. In the analysis he proposes, these nominalizations exclude thematic complements because they have no affix to allow percolation of the theta-grid of the verb. In the related analysis proposed in the next chapter, this data is treated as lexicalized, and not as syntactic. It is not possible to treat bare nominalizations as syntactic as the empty nominalizing affix cannot be PF licensed, and thus cannot be part of the syntactic representation. Consider the following data:

(44) the cook / *the cook of stew

---

[21]Why PRO cannot appear in a purpose clause without being licensed by either an implicit agent in a theta grid, or by another PRO c-commanding it, remains a mystery.

[22]The account proposed later also escapes this sort of stipulation.

(45) a good buy / *a good buy of clothes

(46) a large take / *a large take of money

(47) a real find / *a real find of ideas

(48) a clambake / *a bake of clams[23]

Other examples of bare nominalizations may take an object, but generally select a middle reading and prohibit *by*-phrases or possessive agents.

(49) the start of the game (*by Bill)

(50) the push of a button (*by Bob)

(51) the run of the store (*by Fred)

(52) *Bill's start of the game

(53) *John's fracture of a leg

(54) *Fred's smell of fish

There also exist certain bare nominalizations which allow both *by*-phrases and control, but Roeper notes these as "haphazard" which "should be viewed as exceptions" (p. 287):

(55) the use of drugs by Bill to get high

(56) the review of the book by the *New York Times* to debunk leftists

(57) the pursuit of money by Americans to achieve happiness

---

[23]Roeper notes the following examples as exhibiting sporadic productivity, however, they show significant meaning shift indicating they are probably lexicalized as nouns taking certain forms of PP complements: *the make of a car, the run of the house, the leap of faith.*

In conclusion, Roeper provides an argument against the sort of Lexical Conceptual Structure analysis used by Hale and Keyser, etc.

> The thematic grid is a formal object in Government-Binding Theory. Its existence depends upon there being a distinction between the "meaning" of a word and its formal accoutrements. I argued at the outset that the notion of "agent" that is entailed in the word *thief* is distinct from the thematic role AGENT associated with *robber*. The difference is reflected in a syntactic diagnostic: *robber* allows an *of*-phrase, whereas *thief* does not.

Representations in Conceptual Structure, which involve a semantic representation utilizing thematic roles which are then linked to a syntactic representation, cannot make this distinction without additional machinery which would amount to no more than a form of notation, and not explanation.[24]

Roeper then considers whether or not all morphological rules obey the Projection Principle and carry syntactic representations along the lines of those considered by him earlier in his paper. He concludes[25] that not all morphological rules have such syntactic consequences and makes the following generalization (p. 301):

> Morphological rules that do not add an affix do not obey the Projection Principle.

On the issue of Learnability he concludes (p. 301):

> I have stated these principles with an eye toward the acquisition problem. Does the distinction between lexical rules that have been discussed here have properties that a child could identify? In fact, (example above) is a plausible candidate for Universal Grammar that would allow a child to know immediately whether a derived word obeys the Projection Principle. A single instance where an affix is present should trigger the conclusion that the Projection Principle is obeyed. The child then has a concrete trigger: an affix.

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[24]See Speas (1991) for a full discussion of Lexical Conceptual Structure.

[25]He reaches this conclusion based on a productive ergative rule in English discussed by Keyser and Roeper (1984), which demonstrates that there is a productive morphological rule which does not involve the sort of syntactic consequences in representations of thematic structure and control exemplified by other suffixes such as *-er, -able*, etc.

> The presence of an affix means (a) that a rule is productive and (b) that it preserves thematic roles.

Why this should be the case is the issue addressed in the following chapters. The conclusion is that what we are seeing in this data is not the existence of two radically different types of morphological rules, but a manifestation of the difference between morphological and syntactic operations.

In the next chapter I present a syntactic account of the phenomena discussed in the two previous sections. This account includes a proposal for local trees in the lexicon, and an operation mapping these lexical trees into syntactic trees, through X-bar projection and unification.

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Chapter 3. A Tree Theoretic Analysis of the Mapping of Lexical Structure to D-Structure

The mapping from morphological elements to syntax is a subject of great debate at present. The necessity for an intermediate structural representation between lexical entries and a full syntactic tree is currently accepted by most linguists, however the status of that intermediate or mediating representation is unclear. Whether it is to be considered as structured information residing in the lexicon, allowing the application of certain rules which are strictly morphological (the Lexicalist approach), or whether this level of intermediate representation is actually a level of syntactic representation is at issue. If Deep Structure is taken to be a level of pure representation of lexical properties, then it could be argued that this intermediate level is identical to D-Structure. This position may follow logically from Rizzi's recent attempts to dispense with DS as a level of syntactic representation, and reduce movement to well-formed relationships between antecedents and anaphors (including traces). Other linguists, for example, Baker (1988) consider this intermediate level to be a level of Morphological Structure, at which certain syntactic-like rules and principles hold (eg. the ECP) and certain other purely morphological rules hold. Others, e.g. Borer (1988) consider no intermediate level of representation to be necessary, but posit the existence of a sub-system of grammar, akin to Case Theory or Binding Theory, concerned with morphology, calling it Morphology Theory. The principles of Morphology Theory then may hold at different levels of representation, as do the other components.

Let us adopt the position that an intermediate level of representation is necessary, and assume in the first instance that this level is pre-syntactic, but acts as the interface between lexical entries and full syntactic trees. In a later section, we will consider whether the structure we have been developing can be treated as purely syntactic.

3.1. The Structure of the Lexicon

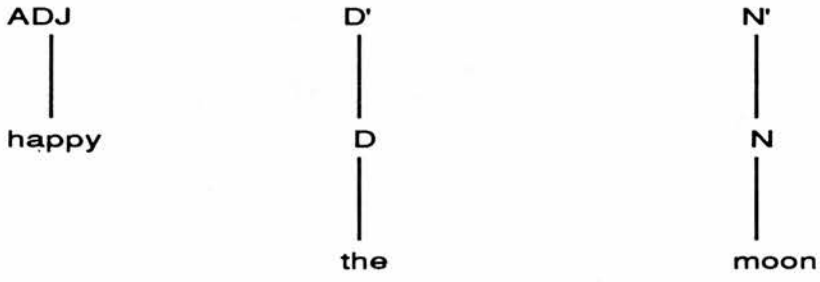
Various linguists have entertained equally various notions of what the lexicon is. Some have considered it as simply a list of the words of a language, along with some information about these words (as parts of their entries) such as how to pronounce them, what part of speech they are, if they are a verb, what sort of verb they are (in terms of valency, and in terms of inflection), and any restrictions they may enjoy in terms of their potential to combine with

other words or morphemes. Patterns of regularity across the list, such as the fact that most plural nouns in English end in *-s*, are represented as Redundancy Rules. Whether or not these are considered to be rules in a procedural sense, which would apply to a listed noun, singular, to give a new, unlisted noun, plural (and related in a systematic semantic way to the original noun), or just as noticed patterns of regularity over a pre-expanded list of morphemes (Lieber 1980) has never been clearly decided.

3.2. *What is Lexical Structure?*

Assume that the lexicon and morphological rules, rather than being considered a list of entries and a set of redundancy rules or transderivational constraints, actually consist of a set of underspecified trees (these are the lexical entries) and a set of operations, perhaps only one, on these trees that define their successful unification into a complex morphological tree.

Some trees will be very simple:



These morphemes don't subcategorize for any complements, so are only represented as unary categories.[1] We represent them as only projecting to the X′ level as this is the level at which heads appear with their complements (cf Williams 1989). Thus we are treating the X′ projection as a maximal projection at L-Structure.[2] Elements occuring outside of the X′ level are

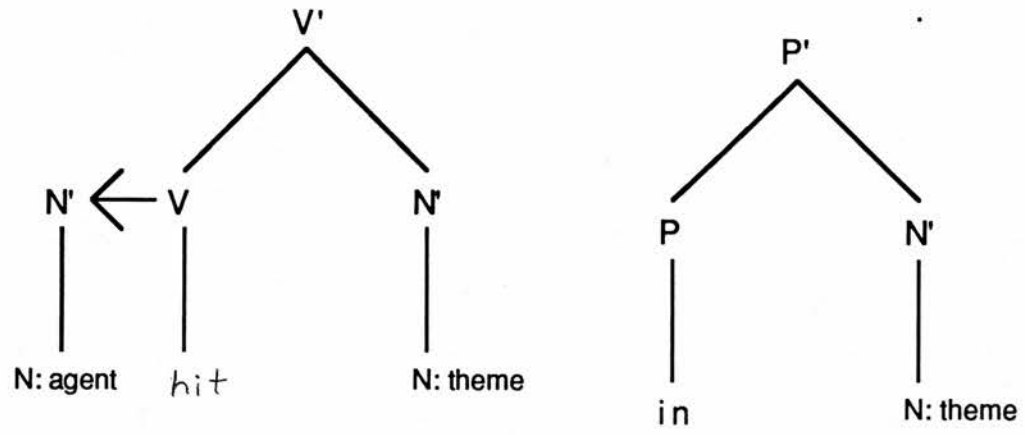
---

[1]If a DP analysis is assumed, however, then DET will select a +N complement.

[2]Speas (1991, Chapter 2) argues that there is a rule, Project Alpha, which creates Projection Chains. She argues further that only maximal and minimal projections (XP and X) can be referred to by syntactic rules, following Travis (1984). From this she concludes that intermediate projections (X′) may arise, but are always a kind of 'elsewhere' projection and cannot be referred to by syntactic rules, they only serve to distinguish specifiers from

specifiers and adjuncts, and thus are not part of the subcategorization information of the head.[3] There is also a phonological representation, but I suppress this in the interests of clarity.

Morphemes which subcategorize for a complement have a more complex representation:



These representations are over-simplified, and will be modified in the process of this investigation, but demonstrate satisfactorily that a morpheme which subcategorizes for complements can represent this information structurally in the lexicon. Essentially, this analysis is equivalent to Williams' (1980) notion of the representation of verbs including a reference to a privileged, external argument (underlined, in his system). He stipulates that the external argument of a verb (roughly equivalent to "subject") be realized outside the maximal projection of the verb, that is, outside of VP. That is exactly what is represented in the tree for *hit* above. The mapping from Williams representations to these is so far monotonic.

---

complements. She claims further that X′ can iterate. I claim that X′ is a maximal lexical projection, and that is why it is generally invisible to rules of syntax. It contains a head, and the obligatory arguments of the head.

[3]In some cases the head restricts the specifier position, or lexically selects its contents. I deal with this eventuality in more detail in Chapter Six. However, I do represent the external argument, or subject, in these lexical entries. It is not anchored at L-Structure. As a consequence, in English at least, it appears in the nearest available position (usually [SPEC, IP]), or is omitted, as in passive.

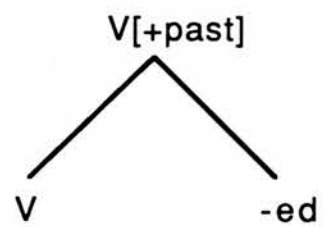
In languages with idiosyncratic case assignment to objects, or subjects, we would also indicate this information on the tree, though structural case isn't actually assigned until S-Structure. Interestingly enough, this approach is so far also equivalent to Hale's (1983) proposal to implement his Configurationality Parameter by having non-configurational languages such as Warlpiri represent their theta roles associated with verbs in a representation such as:

{argument1 {argument2 verb}}

Where argument1 is the subject/agent and argument 2 the object/patient. Although there is no evidence for a syntactic VP in these languages, there are some subject-object asymmetries (with respect to agreement, for example). Therefore Hale adopts the above representation at a level he calls L(exical)-Structure. He then asserts that the Configurationality Parameter expresses itself by determining where the Projection Principle must hold. In Non-Configurational (hence NC) languages it only holds between Lexical Structure and LF[4], rather than at all syntactic levels as it does in configurational languages.

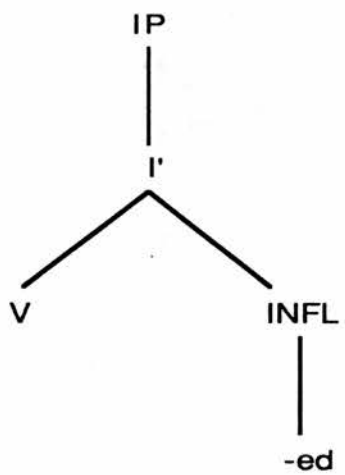
3.2.1. Affixes

Affixes are also represented as trees in the lexicon. Consider the following entry for the past tense marker.



[4]In his formulation Hale does not specify that the Projection Principle holds between L-Structure and Logical Form, but merely states that it holds at L-Structure. However, it is clear that in order to have a coherent semantics for these languages, Logical Form must have access to this lexical structure. In configurational languages, as the Projection Principle holds of all levels of syntactic representation, S-Structure provides the necessary input to Logical Form.

Essentially, when *-ed* unifies its tree with that of a verb, it does it by creating an adjunction structure, which is already partially specified in the tree for the affix. This is roughly equivalent to a categorial treatment of morphological affixation, as discussed above. In syntactic adjunction, the category of the adjoining item is not specified in advance. There is a sense in which, although these structures look like adjunction (Chomsky-adjunction), they are not adjunction in the sense of optional, or X' argument. They are like complements in the sense that a tree dominating an empty node, such as the V in the above example, is ill-formed by the Stray Affix Filter.[5] This suggests not that some form of the ECP holds at *L*-structure, but that a syntactic tree incorporating such a lexical tree would be ill-formed. If we assume that tense morphemes are dominated by INFL, and that the verb must move to INFL to get tense, then a syntactic device for filling this node is indicated. A tree demonstrating this analysis is:



[5]It is possible that the specified category slot V is not needed, but is limited in the category of its potential fillers by general constraints on category matching of the sort discussed in terms of category unification in Cann & Tait (1990), or in terms of defining possible governors for traces as in Chomsky (1986a) or Rizzi (1990). However, the sort of template morphology demonstrated in languages such as Acoma or Navaho, in which the stem is associated with a number of ordered affixal positions (as many as 13 in some cases) suggest that labeled category slots may be necessary. Otherwise, this ordering information must follow from a deeply embedded syntactic structure in which the affixes themselves are syntactic heads which correspond to their adjacent elements.

This is the analysis that will be adopted in the development of our argument. It has the obvious advantages of conforming to generally understood principles of movement and headedness already available to the syntax, and in fact underlies many contemporary syntactic accounts, providing the structure for V to INFL movement.[6] This brings clearly into question, however, traditional divisions of morphology into inflectional and derivational. It would seem that a new division is emerging between **syntactically active morphology**, including some derivational affixes which show relative productivity and which preserve or add to argument structure and inflectional morphology in which the affix heads a syntactic projection, such as verbal affixes in general, and **syntactically inert morphology**, including on the one hand derivational morphology which preserves no argument structure, such as *-ful*, or *-hood* (which are interestingly enough of lesser productivity), and which might have undergone phonological change which has obscured the identity of its parts, and on the other hand **syntactically determined morphology** which does not head a syntactic projection, but which is determined by feature percolation or processes such as true agreement, such as plural marking on nouns in English.

3.2.2. Raising Adjectives

In this section I treat the raising adjectives, like *certain* and *likely*, and contrast them with *probable*, and other non-raising adjectives.

We could assume that these adjectives differ from adjectives like *happy, poor, light*, etc in that they aren't introduced at L-Structure in predication structures. We can represent a predication structure as:[7]

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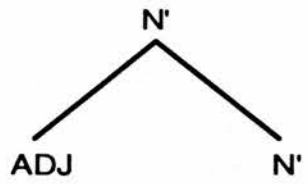
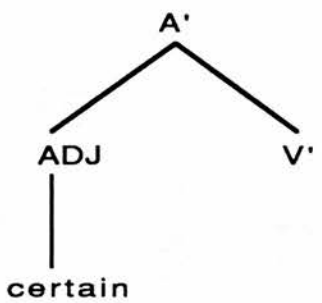
[6]Following Cann and Tait (1991) and Ouhalla (1990) I will assume that there are no lowering rules in the syntax, and thus that the possibility of INFL to V lowering, as suggested for English (Emonds (1978), Chomsky (1988)) is ruled out in principle.

[7]The projection of predication structures is discussed in more detail in Chapter Eight. Generally, a predication structure is taken to be an exocentric local tree containing a nominal and a verbal element, which semantically predicates over the nominal.

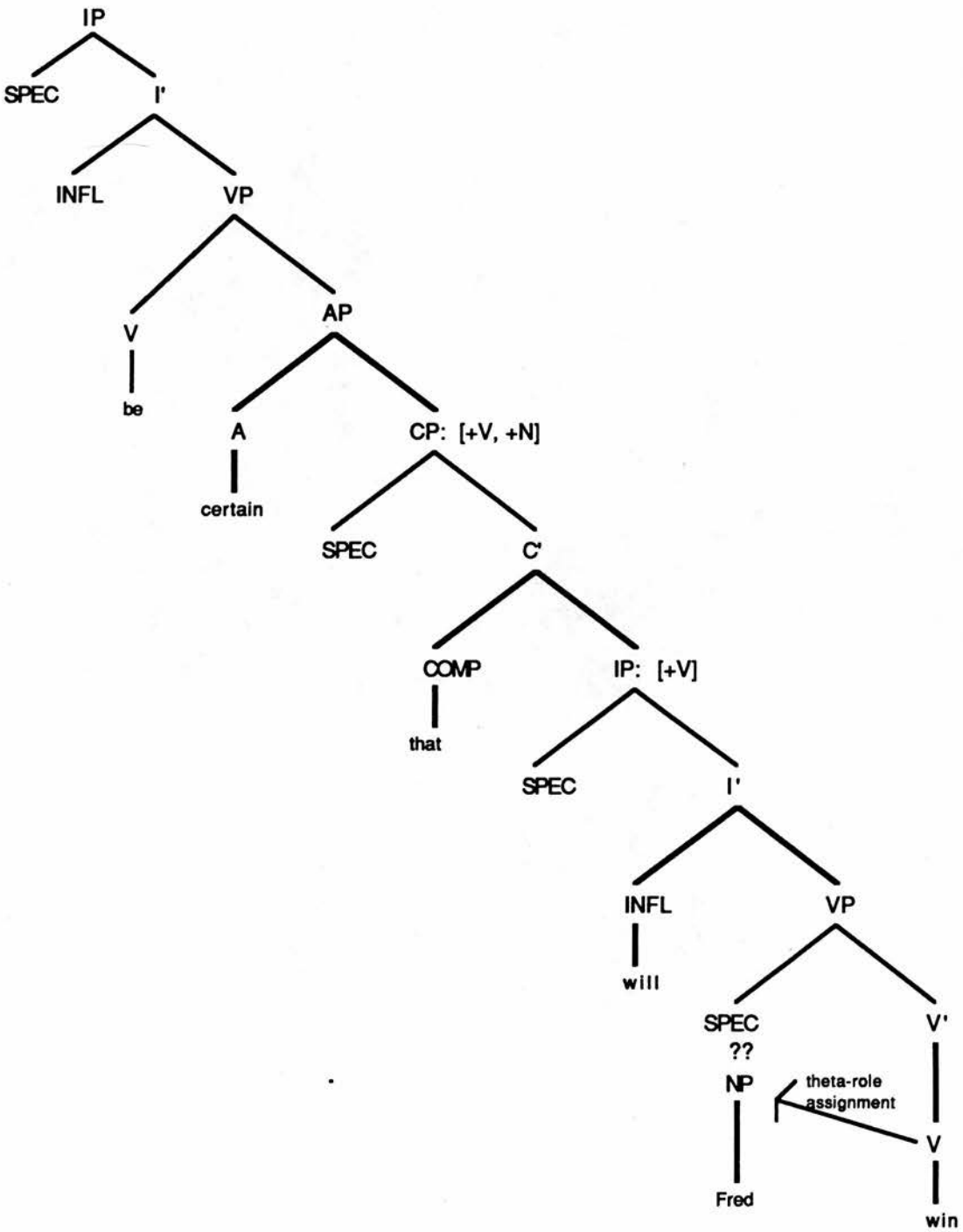


The lexical tree for *certain* differs as follows:



Rather than appearing in a predication structure, the raising adjective L-selects a verbal complement. Two different structures can result from merging this tree with the tree of a verb:

If the subject isn't raised, then you get a dummy subject, *It is certain that Fred will win*. The V introduces its external argument, which is attached to the IP at D-Structure.



This tree is a rather rough representation of the unification of the appropriate lexical trees at D-Structure, before movement has occurred.[8] The bold lines indicate those parts of the tree which are present as local trees at L-Structure. To derive this sentence, *certain* has taken the [+V] element CP as a complement. A head which L-selects a [+V] complement can theoretically take this complement in the form of a CP, IP or VP. The cases where this complement is a CP or an IP are discussed here. Because a bare VP is headed by a bound morpheme (the uninflected verb), it can only appear in a well-formed structure which includes a governing head which allows V-adjunction, in order to satisfy the Stray Affix Filter. The subject of the verb *win, Fred* in this example, is shown somewhere beneath [SPEC, VP] (position indicated by question marks). Some linguists have proposed that subjects arise in this position in certain languages, including English (The Lexical Clause Hypothesis[9]). We will remain neutral on this issue at this time, however, wherever the subject is at D-Structure, at S-Structure it must be in a position to receive case. Thus it must have risen to [SPEC, IP], in this example. Whether or not it passed through [SPEC, VP] is a moot point.

---

[8]I have glossed over several issues, for example, whether or not the verb *win* raises to INFL. If we want to treat bare verbs (neither infinitives, nor tensed verbs) as bound morphemes in English, thus forcing movement in cases where they occur, then we cannot leave the verb in situ here. It could be argued that it adjoins to *will*, giving a periphrastic construction. It will be consistent with the analyses presented further on in this thesis to assume that the verb always moves. It could be assumed that *will* heads a Modal Phrase, which takes an [- Finite] IP complement. See Cann & Tait (1991) for a more in depth discussion of the English auxiliary system.

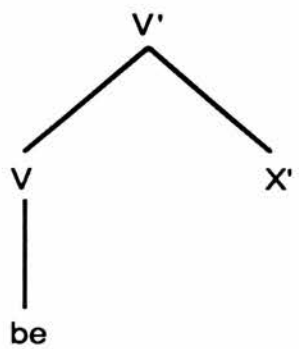
Further, I have not shown in any detail the structure at the top of the tree, notably that introducing the verb *be*. The constructions involving be, called either predication or equative, are discussed in Chapter Eight.

[9]The Lexical Clause Hypothesis (Bennis (1984), Fukui and Speas (1986), Kitagawa (1986), Koopman and Sportiche (1985), Kuroda (1986), Sportiche (1988), also, in some form, Fillmore (1968) and McCawley (1970)) claims that at D-Structure all arguments in the theta-grid of a verb are located in positions dominated by projections of that verb. Kitagawa and Sportiche claim that for the external argument this is in a VP adjunct position. Speas (1991) claims that it is in the SPEC of VP position, but describes this:

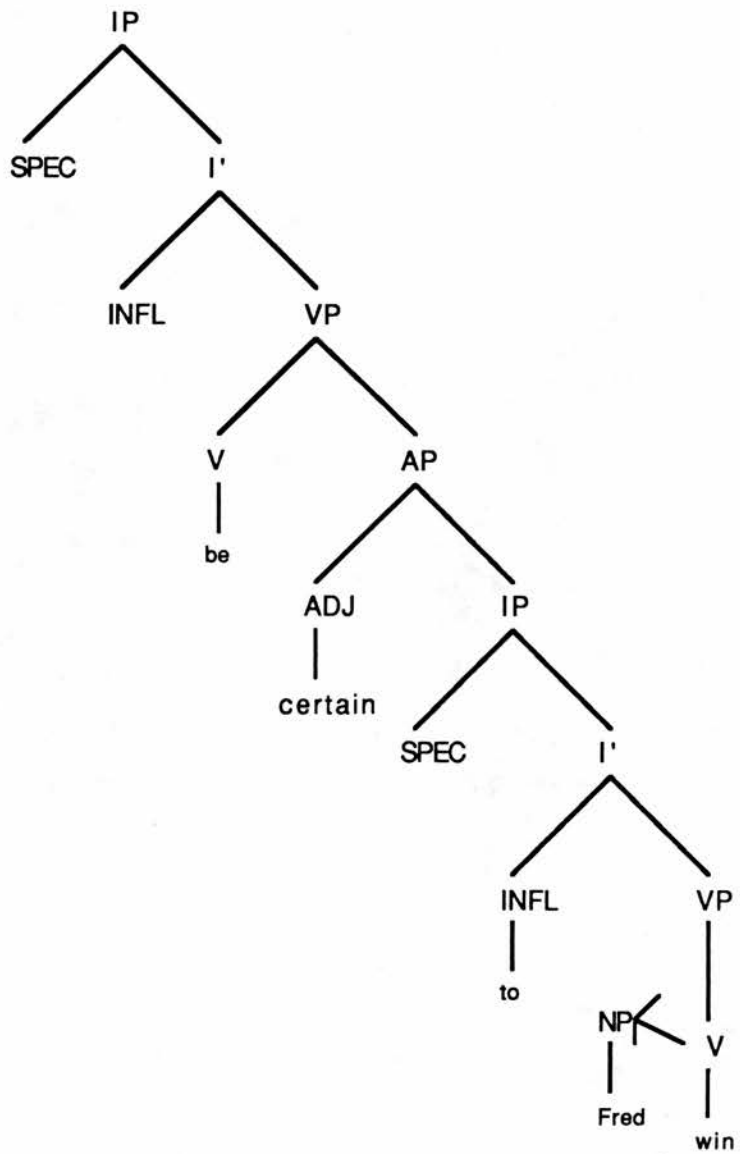
The projection of the verb has the structure suggested for small clauses across categories by Stowell (1983). (1991 p 30)

In those sentences where the subject has raised, giving for example *Fred is certain to win*, we see an example of the raising adjective taking an IP complement.

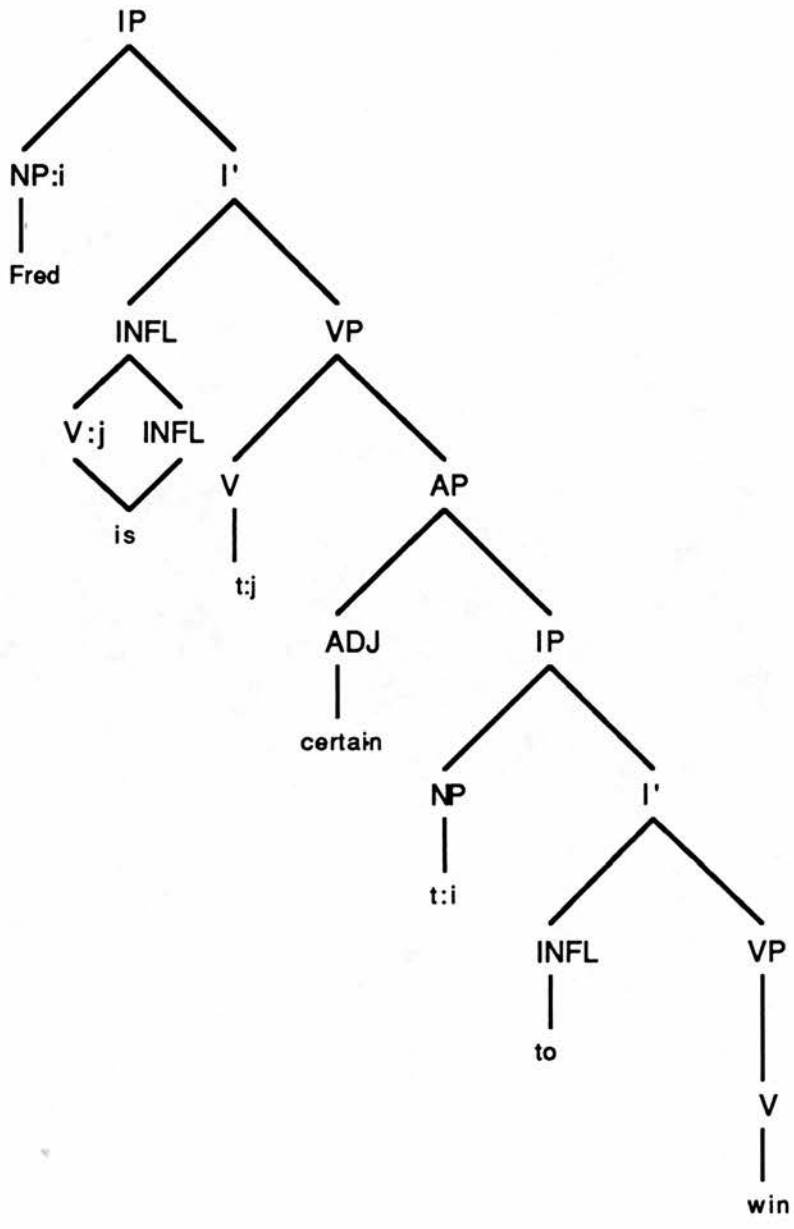
Assume that the lexical tree for *be* is as follows:



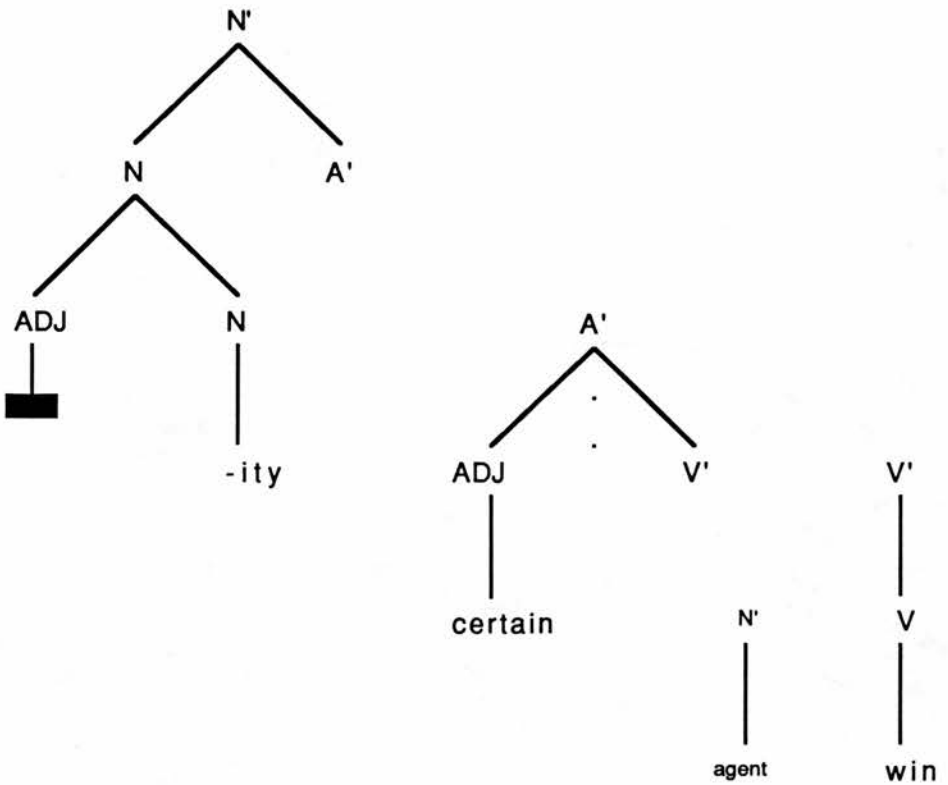
We want the X' complement of *be* to be a predication structure. If it is A' then you get the expansion for the tree of *certain*. If it is N' then you get a normal predication structure of the kind that dominates adjectives. It might also be possible to assume underspecification at L-Structure and not specify the dominating node of a predication structure at all. We won't pursue this alternative at the moment but will return to it later. Note that this X' must be [+N] (i.e., either NP, CP, or AP).



At S-Structure, the tree will be:



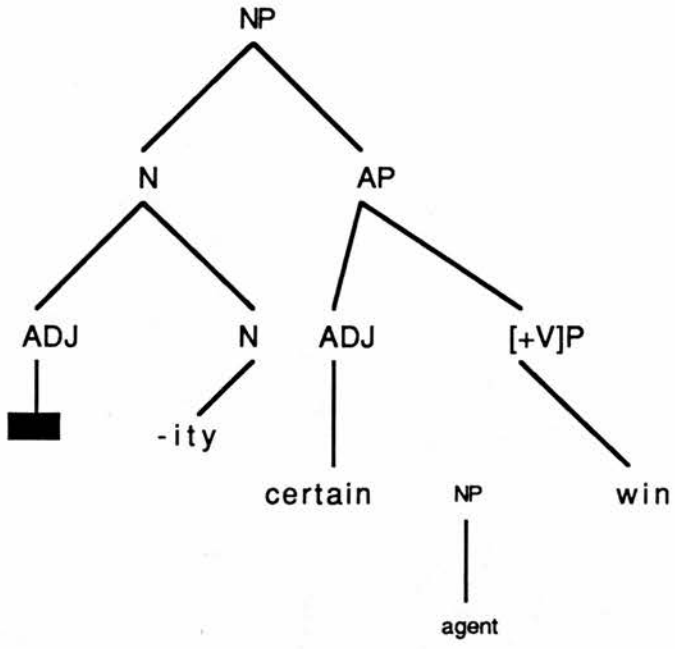
Unification of the lexical trees for *certain* and *-ity* derives *certainty*. In the following example, a verbal projection for *win* is given for completeness sake.



Note the base-generated adjunction structure for *-ity* (indicated by a black box). Some adjunction structures arise in the mapping from D-Structure to S-Structure, others, like this one, are present at L-Structure, indicating the categorial combinatory properties of the affix.[10] Tree unification yields:

---

[10]This notation is used in an attempt at clarifying the structure. The categorial requirements of the affix are also represented by its complement. Showing the adjunction as base-generated, however, indicates that *-ity* is both a head, and a bound morpheme.

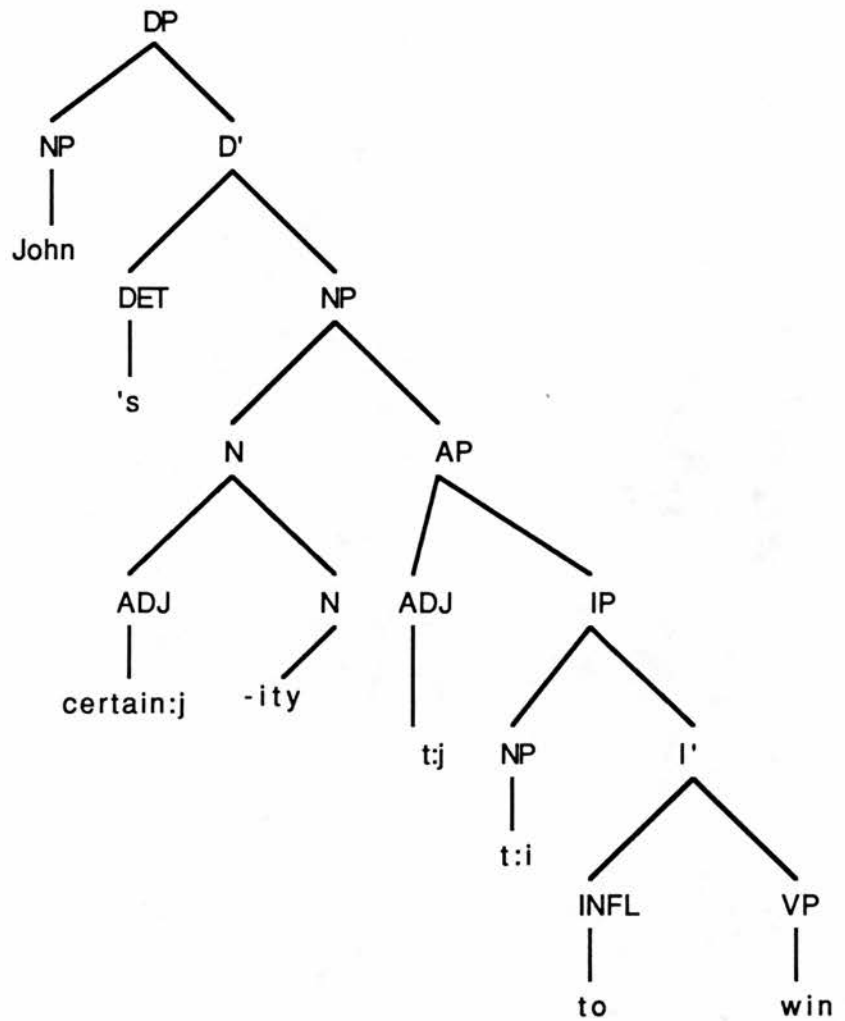


Note that the external theta-role of the verb is still unattached. The maximal lexical projections, X', have projected in the syntax to XP. If the [+V]P is expanded into CP, then this NP will appear in [SPEC, IP]; if the [+V]P is expanded into an IP then the NP will also attach to [SPEC, IP], but will be forced to move in order to receive case.[11] The potential places this NP can move to are limited to one: it can move up into a possessive structure, [SPEC, DP], giving *John's certainty to win*, as illustrated by the following S-Structure tree.[12]

---

[11]It is not entirely clear how to block the derivation of phrases like *the certainty of John to win*, if indeed they are ungrammatical.

[12]None of the maximal projections which the NP must cross are barriers, according to the definition given in Chapter Eight.



Note that this indefiniteness of attachment only affects the external arguments of verbs. Objects always appear attached as sister to the verbal head at L-Structure.[13]

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[13]This provides a possible line of explanation for the existence of subject-object asymmetries in languages where the subject does not appear within the VP. The Lexical Clause Hypothesis could be maintained, however, if the asymmetries could be shown to arise through the attachment of the object, as daughter of the maximal lexical projection X', at L-Structure, and the attachment of the subject, as daughter of the maximal syntactic projection XP, at D-Structure.

3.2.2.1. *probable*

If we compare the lexical trees of *probable* and *certain*, we see that they differ crucially in the category of one node. Where *certain* takes a [+V] complement, *probable* takes an [+N] complement.

[A' [ADJ probable][+N]]

The [+N] complement can either expand as NP, or as CP. Therefore, *probable* cannot be a raising adjective and appear in this configuration as the only NP which might raise is attached at L-Structure.

If we unify the trees for *-ity*, *probable*, and *win*, we see this quite clearly. We can also derive *the probability of John's winning* and *John's probability of winning*. To do this, we will have to define lexical trees for *-ing* and for *-'s*.

The formation of the gerund is a type of verb-incorporation.[14]

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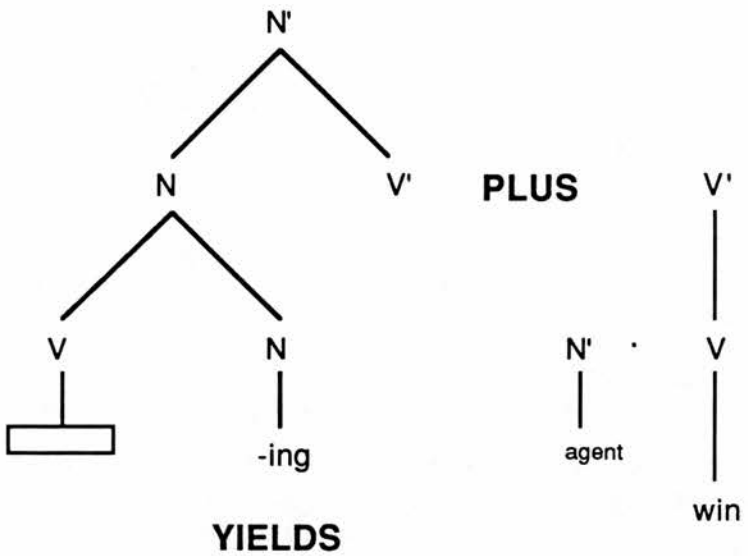
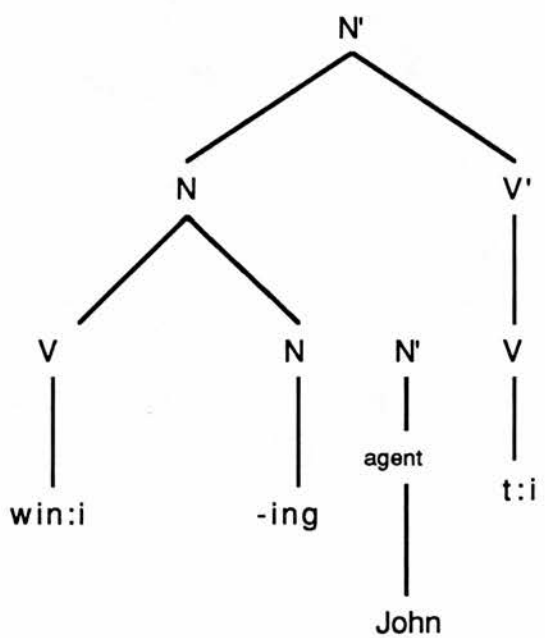
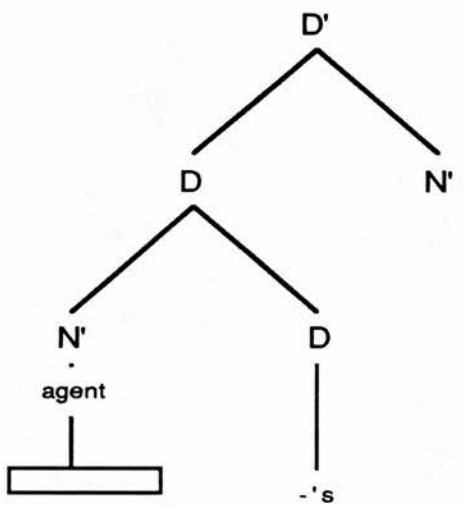
[14]See Fleming (1989) for a similar treatment.


N'
N
V'
V
N
-ing
PLUS
V'
N'
V
agent
win
YIELDS


N'
N
V'
V
N
N'
V
win:i
-ing
agent
t:i
John

I will follow Cann & Tait (1990) in treating the possessive *-'s* as a determiner head of DP.[15] This possessive *-'s* is a noun-incorporating affix.



Given this, we can derive *John's winning*.[16]

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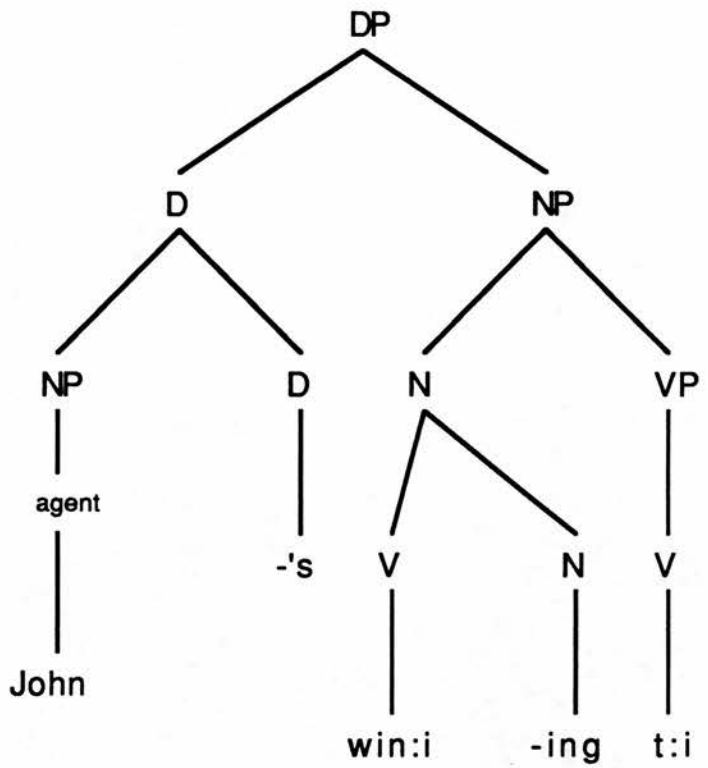
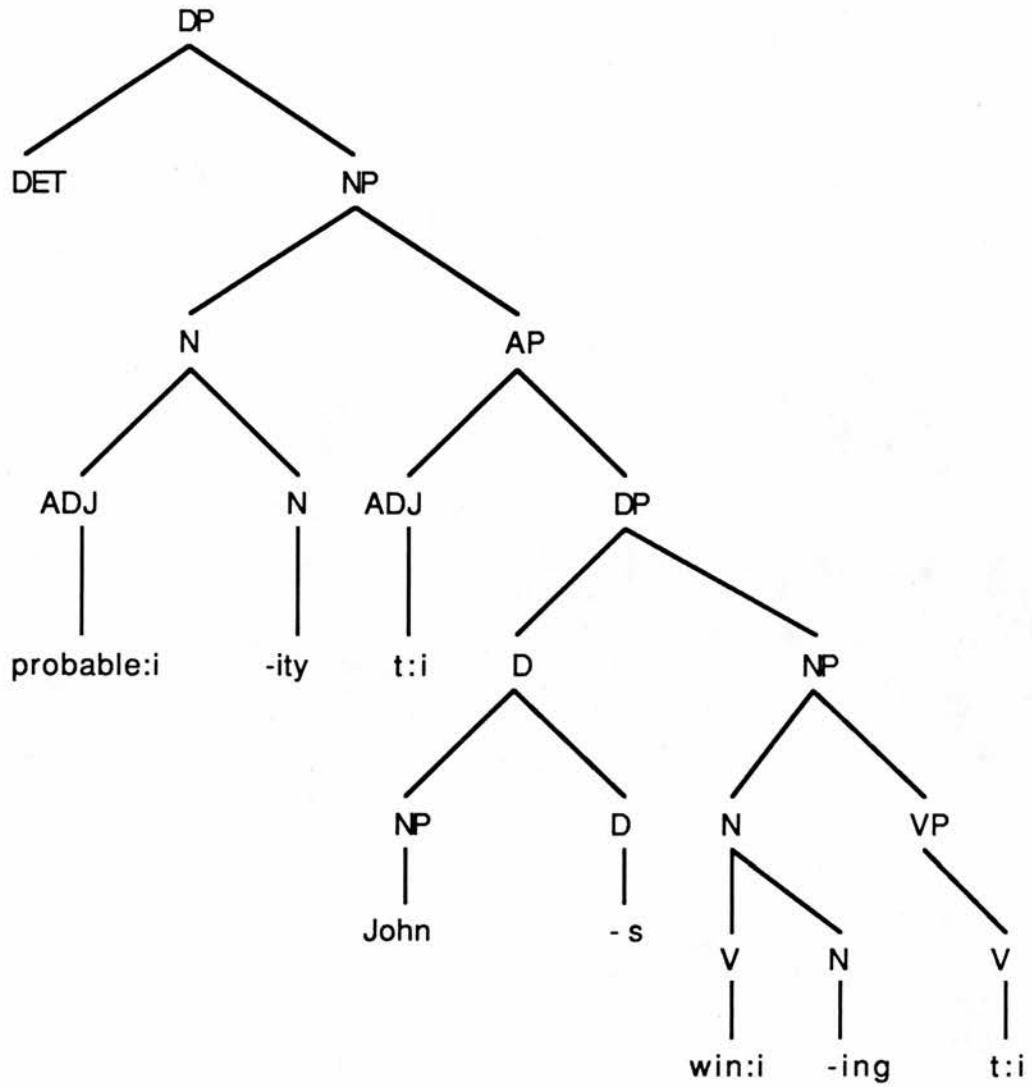
[15]This is following Abney (1987) which allows for the syntactic projection of functional categories.

[16]There is another analysis, in which the possessive element is not an affix, but a clitic, and thus attaches to the NP at PF. In this analysis, similar to the one given earlier for *certain*, the agent NP raises to the [SPEC, DP] position.



If we allow the unification of trees headed by N and DET, following Abney (1987) at D-Structure then we derive *the probability of John's winning* and also *John's probability of winning*.



This tree shows the external argument of *win* appearing adjoined to the determiner head which takes the NP headed by *-ing* as complement. The derivation of *John's probability of winning* results from the adjunction of the external argument, *John*, to the higher determiner position which takes the NP headed by *-ity* as complement. In any case, including *the probability of*

winning, the semantically null preposition *of* must appear in order to assign case to the lower DP.[17]

In this way we derive the difference in syntactic behavior of raising and non-raising adjectives from the category of complement they take at L-Structure. If they take a [+N] complement, they are not raising morphemes as their potential raisees are all attached at L-Structure and are governed by lexical heads. If they take a [+V] complement they can potentially allow the external argument of their complement to raise, as it is unattached at L-Structure, but must be attached in the syntax.

3.3. *Syntactic Operations on Lexical Representations*

3.3.1. X-Bar in the Lexicon

The only levels of X' theory expanded in the lexicon are to the single bar level (Roeper 1987, Williams 1989). This gives us only lexical heads and their arguments. No adjuncts exist at L-Structure (qua adjuncts). True adjuncts arise from the mapping from D-Structure to S-Structure where they unify in (from other lexical-trees). The expansion of single bar levels to double bar/phrasal levels is an application of X' Theory that only holds of the mapping from L-Structures to D-Structure. However, some morphemes include in their representative trees information about arguments which arise outside of their maximal projection (X' at L-Structure, XP at D-Structure). This was illustrated in the proceeding section in the treatment of the subject.

3.3.2. Non-Lexical Categories

There is a partition used for the X^0 categories that divides them into lexical and non-lexical for the purpose of the definition of proper government. the lexical categories are A,N,V, and P. The non-lexical categories are I(NFL), and C(OMP).[18] This distinction is represented at the

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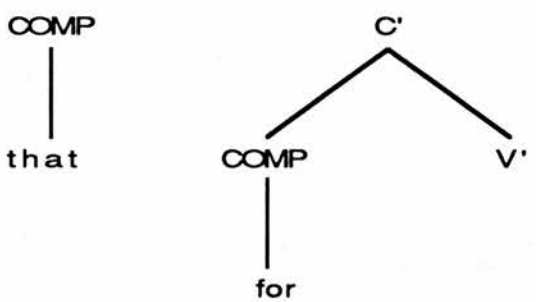
[17]I have not included this preposition in the trees given above. Whether it heads its own PP projection, or is only the head of a Case Phrase (KP), is not important to the argument herein.

[18]But see later discussion questioning this typology.

level of L-Structure in a way which captures this ability of the lexical categories to properly govern their complements. Proper government under this analysis arises directly out of L-Structure. It is defined on the lexical-trees.[19]

The representation of the lexical categories includes their arguments, which are also daughters of their single bar projections. The representation of the non-lexical categories need only be a unary tree, if we accept CP and IP as universal categories[20], only projecting to the X^0 level. An exception, though, could be made in the case of *for*, which subcategorizes for an infinitive complement:[21]



In this sense, *for* is an exception to the categorization of complementizers as non-lexical. There is an interesting interaction here in that *for* can also assign case, which other complementizers can't. Because *for* assigns case to the subject it must co-occur with *to* in INFL, as a finite INFL would also assign case to the subject, which cannot be assigned both nominative case by [+finite] INFL and accusative case by *for*.

3.3.3. Predication Structures: A Preliminary Analysis

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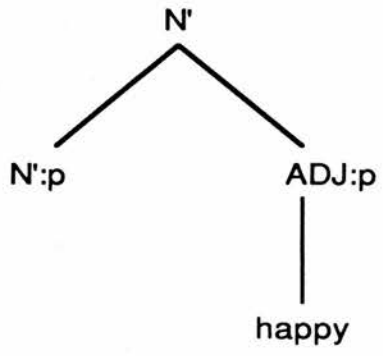
[19]This is similar to the definition of government proposed by Anderson in his paper on Kwakwala (Anderson (1984)).

[20]That is, not subject to the PF Licensing Principle for their instantiation.

[21]It can further be argued that *that* L-selects a finite complement, thus casting further doubt on the validity of this distinction.

Adjectives occur in predication structures in the lexicon, which can be expanded into either NP or CP.



The 'p' co-scripting indicates a predication relationship between the adjective and the N'. An alternative reverses the order of N'p and Adj.[22] If the N' expands as CP the N will have to move to subject position in order to get case. The ADJ theta-marks the N' it predicates.

It remains to account for the ungrammaticality of sentences like *The book is large red.* If in the predication structure there is an A' instead of ADJ we might expect to get things like this. We need it to be an A' in order to allow for modification of the ADJ, as in *The book is very red.* In L-Structure representations all adjectives are associated with predication structures. If you try to unify two adjective trees, two N's will result. The only way to get recursive adjectives is by unification at S-Structure.

3.3.4. Incorporation and English Morphemes

The analysis developed here is an extension of Baker's (1988) analysis to derivational morphology in English. The adjunction structures used are categorially predetermined. Examples of incorporating affixes are *-ity, -ness.*

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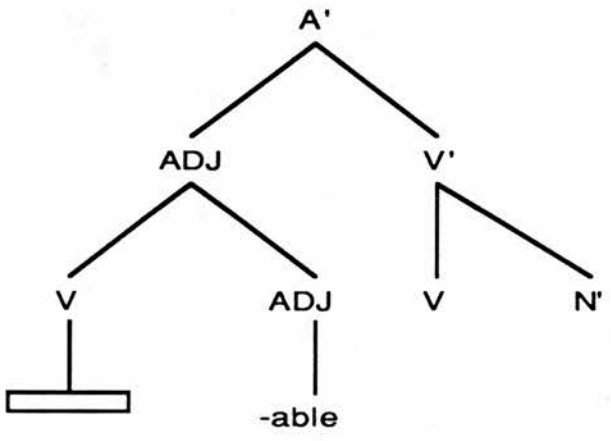
[22]This reversal is not necessary in an interpretation of tree structure which holds sisters to be unordered at D-Structure, ordering relations being imposed by the application of other principles of the grammar, such as Direction of Case-Assignment, or Government.

3.3.4.1. Affixes Which Incorporate Verbs

We treat as incorporation the process of stem selection by category shown in some derivational processes. The lexical tree for *-able* is as follows:



The effects of *-able* are generally agreed to be to remove the external argument and to externalize the theme argument (Roeper 1987). The box indicates a landing site for the verb, which must move to satisfy the Stray Affix Filter.

In general it is true that the derivation of words like *dependable, reliable,* results in the suppression of the external argument.[23]

(1) *Fred is dependable by me.

---

[23]Also note that with these underlying verbs, the preposition *on* is needed to assign case to the theme NP.

(i) I depend on John / John is dependable.

This preposition does not appear under *-able* affixation, a result consistent with our analysis of these case assigning prepositions as arising at S-Structure.

(ii) *John is dependonable / *John is dependable on.

(2) *Albert is reliable by many people.

However, with other adjectives derived in this way, the external argument need not obligatorily disappear.

(3) This question is answerable by small boys.

(4) This puzzle is doable by an average 5-year old.[24]

Given this set of data, we cannot consider it a general property of *-able* that it removes the external argument of a verb which it incorporates, rather it operates like passive and demotes the external argument, if present, to a *by*-phrase. We derive this difference from the morphological properties of the verbs in question. We can argue that the *depend on* cases demonstrate a verb which doesn't assign accusative case. If this is true, then we can derive this distinction by claiming that these are unaccusative verbs.

This amounts to the claim that in the sentence *Doug relies on Bill* , *Doug* is not an agent, or an external argument, but is rather the first argument of the verb, a di-unaccusative. *Bill* occurs as a second object, which must then be case-marked by the preposition *on*. This analysis gives *depend* roughly the following lexical tree:[25]

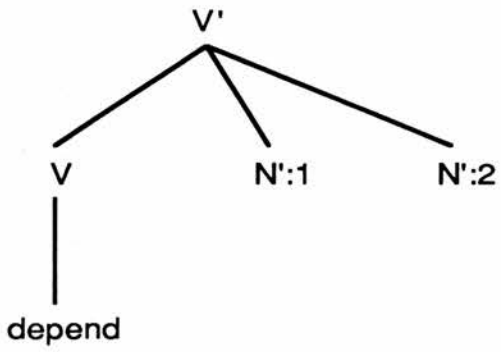
---

[24]We must account for the fact that these external arguments can only be realized in predication structures where the NP has raised. So, for example, the following is ungrammatical:

(i) *Doable problems by 5-year-olds are hard to come by.

It could be argued that this sentence is ungrammatical because the external argument is realized within the maximal projection of the theme argument. So, not only must external arguments be realized outside of the maximal projection of the verb, but also outside the maximal projection of any of the internal arguments of that verb. We will call this the transitivity of external argument exclusion. The external argument is inside the maximal projection of the theme because the theme is *problems* ,the head of the NP which contains the prepositional phrase in which the external argument appears.

[25]A further possibility, in line with the treatment of ditransitive verbs in Chapter Six, could place the first NP in [SPEC, VP] at D-Structure.



If we assume further that *depend* cannot do any case-marking, then N':1 will move to subject position to get nominative case, and *on* is inserted to case-mark N':2. The case-marking requirements of INFL require an NP in subject position. Note, however, that *depend on* forms a natural predicate in terms of passivization:

(5) Bob is depended on t by Bill.

This sentence is consistent with our analysis of the position of the NPs at D-Structure, but suggests that the case-assigning preposition arises before S-Structure.[26] This may suggest that the forms *dependable, reliable* are lexicalized and thus are not derived by a productive process

---

[26]This example is problematic in terms of the Case Theory developed herein. We could assume that the case-assigning prepositions are not assigning structural case, which is determined at S-Structure, but are assigning semantic case (even for those semantically null prepositions), and thus are present at D-Structure, where non-structural case is determined (if this is not already determined at L-Structure, within the lexical entries themselves). The bi-unique case assignment of INFL requires an NP in [SPEC, IP]. If we assume that the preposition *on* assigns case to the trace of the moved NP, then the chain which contains them is doubly case-marked. This is obviously also a problem for traditional Case Theory. It is possible that English differentiates structural and non-structural case sufficiently to not consider the assignment of one of each to a chain a violation of the Case Filter. It seems more likely, however, that the most satisfactory answer lies in the Germanic sensitivity to Dative case. German never allows raising of a Dative argument, either in passive or in tough movement. English allows passivization of a dative argument, but in these cases preserves its dative case-marking. I will leave this as an unsolved mystery.

of tree unification. Further evidence in support of this is the idiosyncratic prepositional collocation of *dependant on, independent of.*[27],[28]

We might also work out a typology of prepositions according to what role they can case-mark:

Preposition	**Theta-Role**
of	theme
on	second-object, dative object
by	agent

Consider further the following data which demonstrate an asymmetry between NP and WH movement in these constructions:

(6) Who do you rely on t?

(7) On whom do you rely t?

---

[27]We might want to say that *independent of* is lexicalized, but *dependant on* is not, as it preserves the preposition from *depend on*. Note also that you get *undependable*, not *independable* which the form *independent of* might lead you to expect.

[28]A further argument in favor or treating *dependable* and *reliable* as lexicalized is the behavior of *count on*. This verb has roughly the same meaning as *rely on* and *depend on*, but has not lexicalized, so:

(i) *On whom do you count__? (Only OK with a different reading).

(ii) *John is countable. (with the reading that John can be counted on.)

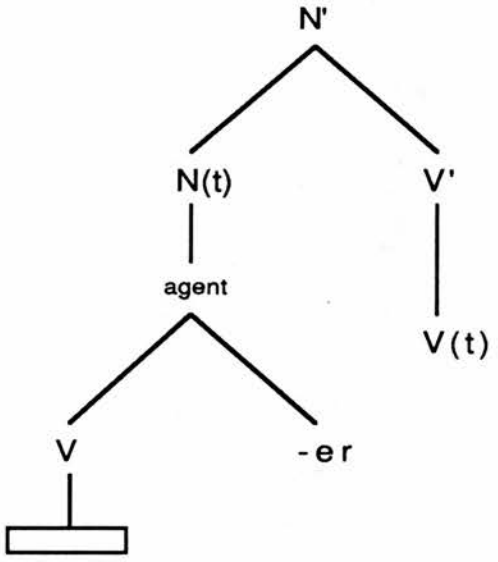
If we treat *dependable* and *reliable* as lexicalized forms, and limit the application of productive *-able* to verbs without a periphrastic preposition (that is, to true transitive verbs), then we can liken the affixation of *-able* to that of passive *-en* with regard to the behavior of the external argument. It can be deleted, but doesn't necessarily have to be.

(8) Doug is relied on t by Bill.

(9) *On Doug is relied t by Bill.

This data suggests that dative case (or perhaps non-structural case in general) is not transmitted through trace, in the way that structural (accusative) case is in examples of WH-movement. The final example is then ungrammatical because movement of the preposition does result in a Case Filter violation, whereas preposition stranding does not.

Another suffix in English which incorporates a verb is *-er*. It s L-Structure tree is:



The N(t) satisfies the external argument of the V, and it is outside the maximal projection of the V (V' here). There are no restrictions on the expansion of V', it could be an intransitive verb. If it is transitive, then any internal arguments the verb might have will be case-marked by *of* as the trace of a verb cannot assign case. This will give us, for example, *writer of novels*.[29]

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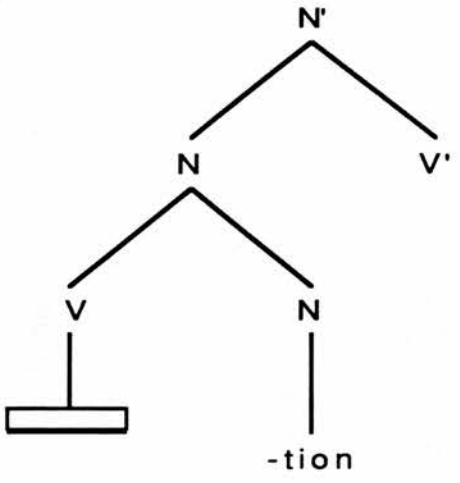
[29]We will assume that the verb is unable to assign accusative case from its adjoined position. This may arise either because *-er* absorbs case, or because verbs that are dominated by N^0 categories can't assign case.

The lexical tree for the suffix *-tion* is as follows:



The major difference between *-tion* and *-er* is that the adjunction structure doesn't satisfy a theta-role of the incorporated verb. Therefore if the verb has a theme argument, this will be realized below V' as a prepositional phrase (in order to be case-marked), e.g. *production of books*.

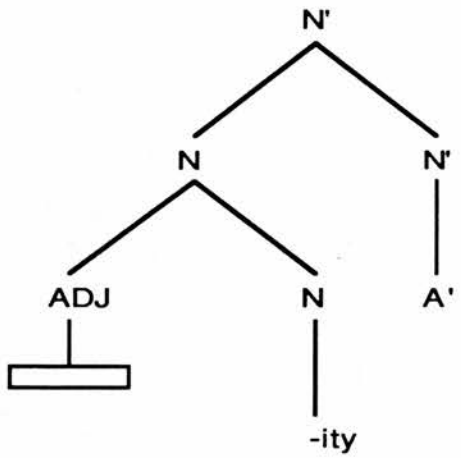
If there is an external theta role, it can be realized as in passive, where it either is implicit or appears in a *by*-phrase, or it can move up to a possessive structure:

(10) production of books by the company

(11) The company's production of books

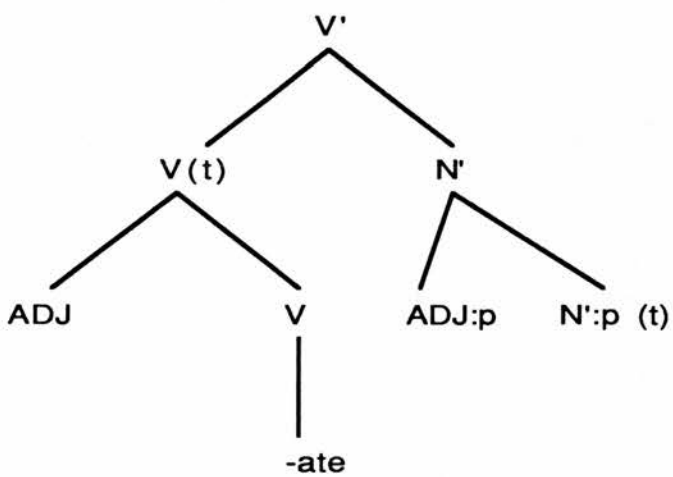
3.3.4.2. Adjective Incorporating Affixes

The tree for *-ity* is:



If we allow N' to expand as either A' dominating N, or just A', then we will get the full range of facts we want. Note that we will have to allow this in any case to derive *the poor will be with us always*, etc.

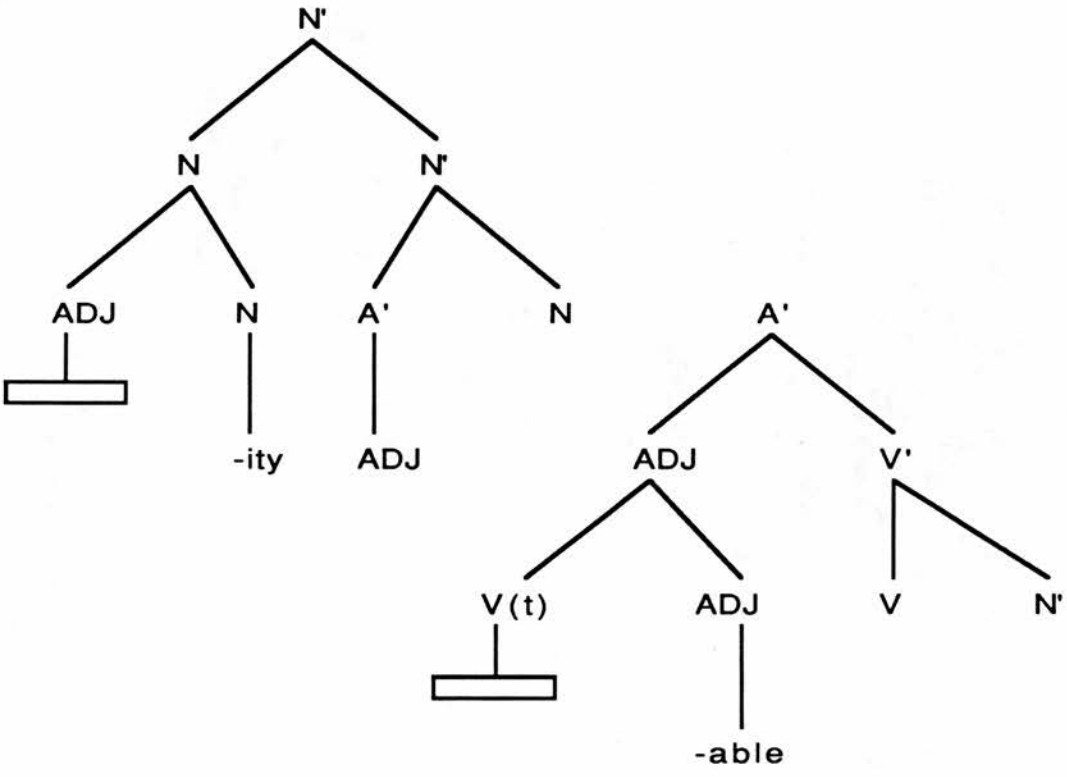
Let us now consider the suffix *-ate*, which is not really very productive, but which is interesting in the light it sheds on predication structures.



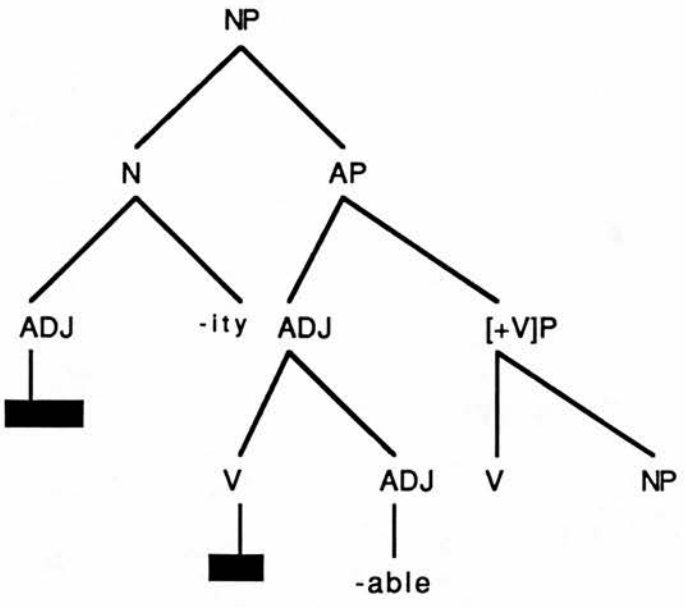
In this structure, the N' complement realizes the theme argument of the verb. The adjective under N' also predicates over this N', so that it will simultaneously have a relationship with the incorporated adjective, and with the resultant verb. For example: *John [[activ]ated] the*

robot. The adjective *active* predicates over *the robot*, indicating that the robot results in being active, and the verb assigns *the robot* its theme theta-role.

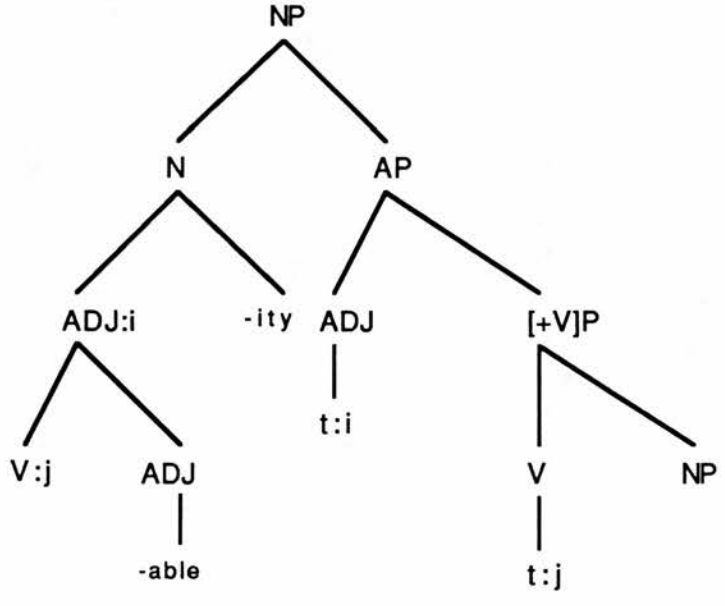
The complex affix *-ability* is easily accounted for in this analysis. It results from the tree unification of the representations for *-able* and *-ity*.



Giving:



Once head-movement has applied, the following tree results at S-Structure:



3.3.4.3. The Problem of Self

Farmer (1989) considers both morphological and syntactic approaches to the distribution of the morpheme *self* on deverbal nouns and deverbal adjectives. She considers two morphological approaches, one in which *self* attaches directly to the verb stem, and one in which *self* attaches after the derivational suffix has been added. These two approaches can be represented by the following two bracketings, respectively:

[[self [verb]] suffix]

[self [[verb] suffix]]

In favor of the first structure, Farmer notes that if *self* prefixes directly to a verb, this would explain why *self* only appears on deverbal elements, and not on other nouns and adjectives. In favor of the second structure, Farmer makes the observation that *self*-prefixation alone does not create a word of English. That is, the following are ill-formed:

*selfemploy, *selfdescribe, *selfabsorb, *selfcivilize, etc.

Thus a typical kind of bracketing paradox in traditional morphology is derived. Farmer then considers whether a syntactic account is possible. She assumes that *self*-prefixation in the syntax follows *able*-suffixation in the lexicon which produces an intransitive predicate (an adjective). However, *self* does not attach to intransitives.

> The problem for the *-able* cases is that by the time the *-able* adjective is inserted into the syntactic tree, the transitivity of the verb stem is lost at least syntactically. But, while *destructable* is syntactically intransitive, *selfdestructable* is perfectly good (p 255).

Farmer goes on to argue that this data supports a separate level of representation, Predicate Argument Structure (PAS). The central problem which this data has illustrated is the preservation of information from lexical entries to syntactic representations. The analysis proposed herein solves that problem neatly. Let us now consider this problem of self in terms of our analysis developed earlier in this chapter.

First, note the following data:

(12) IBM employs Fred.

(13) Fred is employed by IBM.

(14) John is selfemployed (*by IBM).

Note the parallels between the last two sentences. Both verbs take passive morphology. Both employ a *be* auxiliary. In the last example we see that *selfemployed* cannot co-occur with a *by*-phrase of agency. Consider further the ungrammaticality of:

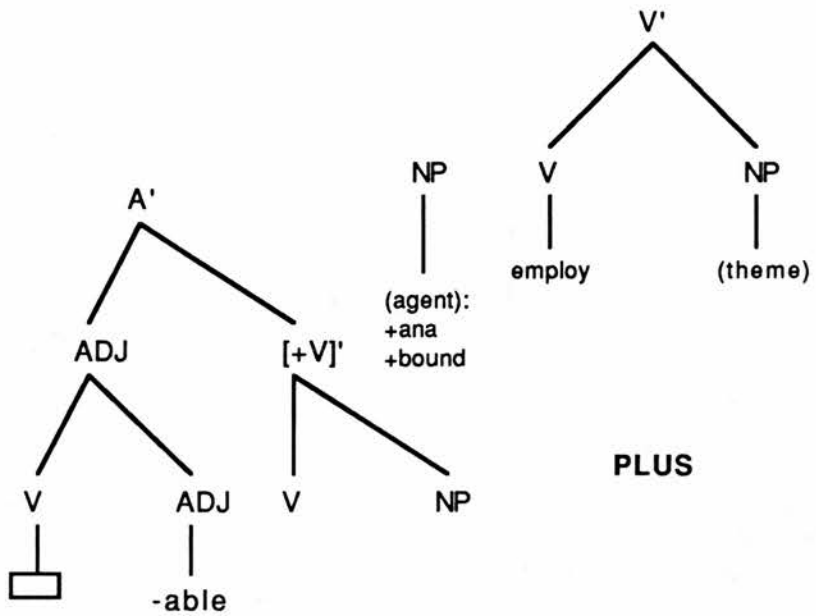
(15) *John selfemploys.

The conclusion we reach from this data is that *self* satisfies the external argument of the verb. If this is true, then the ungrammaticality shown above follows. *self* is a bound morpheme, so must undergo affixation. It cannot do so from subject position, so must appear at D-Structure in a position governed by the verb.[30] As in noun incorporation more generally, *self* is not referential in the limited local context *self* +V (Mithun 1984). It only becomes referential with respect to elements outside of the complex verb through referential coindexation with an antecedent. The account given in the previous section of *-able* suffixation in the syntax can thus precede *self*-affixation,[31] yet preserve the argument structure of the verbal stem so that the output is well-formed. Let us consider how this is possible. Consider the following lexical trees for *-able* and *employ*.

---

[30]We can also assume that the Binding Theory limits the appearance of *self* in subject position.

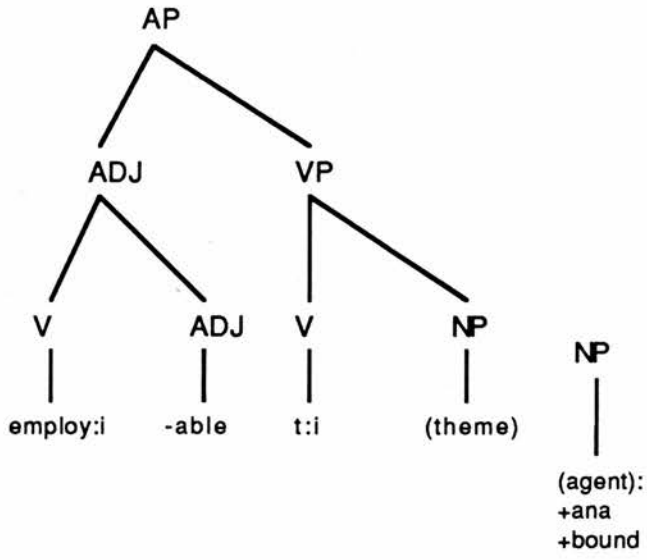
[31]Another possibility related to this account might assume that *self* occurs at D-Structure in the structural position which demoted subjects occur in in passive clauses. I do not mean to imply, however, that *self* is present within a *by*-phrase at D-Structure. If we assume that passive *by* arises through case-marking at S-Structure, then we only need to assume that *self*, or in fact only a bundle of features indicating a bound anaphoric pronoun, is present within the domain of the verb. Thus we assume the analogy: *John is employed by Bill* where the agent is overt / *John is employed* where the agent is not overt / *John is selfemployed* where the agent is anaphoric.



Unification is possible, yielding the output *employable*. The theta-roles assigned by the verb to the two arguments are indicated within parentheses. The external argument appears in the form of a bound anaphoric pronoun. Throughout we will be assuming that pronouns appear in the lexicon as bundles of features, in some cases partially specified.[32]

---

[32]Deverell (1991) uses underspecification of pronominal features in an account of object agreement in Luganda, where the object agreement morpheme is in complementary distribution with a VP-internal lexical object at S-Structure. Assuming an account of Object Agreement Phrases such as that proposed in Chomsky (1988), the featural specification of the ObjAgr head is achieved only by movement of the lexical object through [SPEC, ObjAgrP] and SPEC-head coindexing. Only fully specified agreement heads are phonetically overt. Thus the verb adjoins to the ObjAgr head and object agreement is overt on the verb. Sentences with no lexical object arise from movement of the null pronominal object to [SPEC, ObjAgrP], and SPEC-head coindexing giving rise to an agreement morpheme. By the PF Licensing Principle, then, the overt head licenses a coindexed non-overt specifier.

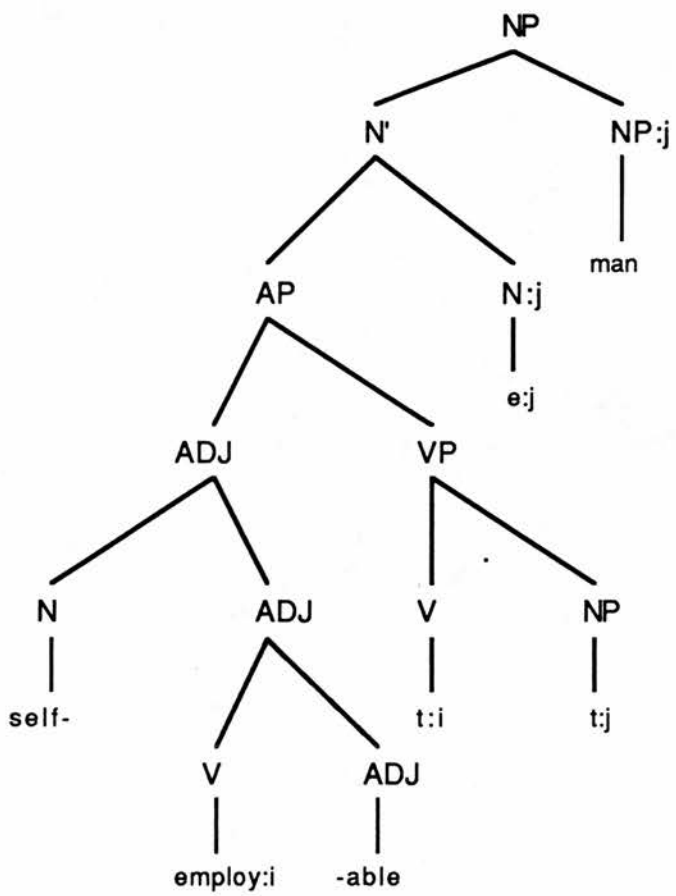


The possibilities of attachment for the external argument are limited. Because it is a bound morpheme, it can only undergo head movement, and then only to adjoin to a head which governs it. The external argument is associated with the maximal projection of V, and thus is governed by any node which governs this maximal projection. In this case, ADJ is the nearest head governor. Thus *self* can adjoin to the ADJ node dominating *employable*. *self* cannot adjoin to the V internal to ADJ as it would then be within the maximal projection of its theta assigner. Thus **selfemploys John* is blocked for two reasons. It assigns case to its object, thus the object cannot undergo NP-movement to [SPEC, IP] in order to satisfy the case assignment of INFL and so a violation of the Extended Projection Principle would result. Also, it is blocked because the external argument cannot be realized within the maximal projection of the verb, so that in languages like English, in which the Lexical Clause Hypothesis does not hold, subjects can only incorporate into deverbalized heads.[33] Thus we get *moth-eaten, care-worn*, etc. which cannot have their origins in *moths eat X*, or *care wears X*, it is only the derivational suffix which licenses adjunction, and thus incorporation, of the agent argument.

---

[33]According to most definitions of head movement (Baker 1988, Cann and Tait 1990), incorporation should be possible from specifier position, as well as complement position, as the head governs its specifier position. In languages where the Lexical Clause Hypothesis can be shown to hold, subject incorporation should then be possible.

Note further that the theme argument of the verb, though anchored at D-Structure, will not receive case in its D-Structure position. It must undergo NP-movement in order to satisfy the Case Filter at S-Structure. There are two possibilities for it. The first is illustrated in the tree below:



The NP raises to [SPEC, NP], giving *selfemployable man*. The specifier position and the empty N head are coindexed through SPEC-head agreement. Assuming the head is empty, the specifer must be filled by material which is coindexed with the head in order to satisfy the PF Licensing Principle. If the head is filled, then the lower NP cannot raise to the SPEC position as it will already be referentially coindexed with the head. If other material occupies the SPEC position, then again NP Movement is ruled out. In [SPEC, NP] the theme argument of the

incorporated verb will be able to receive structural case. This movement crosses no barriers, according to the definition of barriers in Chapter Eight.

The other possibility arises if the AP occurs in a predication structure with *be*, giving *the man is self-employable*. In this case, the NP can move into [SPEC, IP]. Note that the VP dominating NP cannot raise for two reasons, categorial incompatibility with NP-movement[34], and second, if it were to raise, the V-trace would then c-command its antecedent, yielding a Binding Theory violation.

Thus we have seen that a syntactic account of *self*-prefixation which assumes a syntactic account of *-able* affixation as well can account for the distribution of *self-*, and for the propensity of *self* to attach to transitive stems.[35]

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[34]It is likely that NP movement is subsumable to general phrasal movement, without any definitional limitation to noun phrases. The categorial restriction arises from independent properties of case assignment incompatibility with certain categories, such as VP.

[35]It is not strictly necessary to specify this fact in the lexical entries. If *self* attaches to an intransitive stem, satisfying its external theta role, then no additional argument is available to be predicated over. In the case of the adjectival passive, no NP is then available to move into subject position. *It* insertion cannot apply without a violation of Principle B of the Binding Theory.

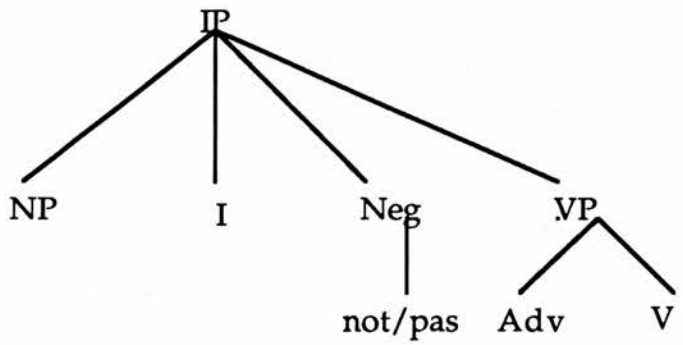
4. The Projection of Affixes

One recent development in grammatical theory which has served to produce even more abstract tree structures has been the extension of the property of syntactic projection to affixal categories. This can be seen to some extent as an outgrowth of the program of syntactic affixation which originated in Fabb (1984), and was further developed in Baker (1988). Fabb explored the analysis of inflectional morphology within the syntactic component, with particular attention to the effects of the passive suffix *-en*. Baker, looking at data from many languages, explored a syntactic account of the formation of causatives, noun incorporation, applicatives, and also passive. His analyses of certain phenomena, particularly causatives, were to a great extent informed by the Predicate Raising analysis of Generative Semantics. Pollock (1989) extended the ability to project into the syntax to affixes, primarily affixes involved in the auxiliary system. By allowing them to head their own projection, they not only were subject to the rules of the syntax component (as in Fabb 1984) but also could then be subsumed to general principles of syntax, rather than needing to be treated as special categories. In terms of movement, and the general application of the Move-Alpha rule to these categories, several extensions to constraints on movement have been postulated to take account of the special case of Head Movement, or Affix Movement.

4.1. Pollock and the Extended IP Analysis

Because of the importance of this paper, I will spend some time discussing the technical innovations Pollock proposes. In general, I want to make use of his insights, but must take issue with many of the mechanisms he introduces to manifest them. I will therefore provide a short discussion and critique of his program. One of the immediate problems one faces in attempting to evaluate Pollock's contribution is the large number of assumptions he makes in this paper. By assumptions I mean specifically stipulations to the theory for which he provides no argumentation, and for which he considers no alternative analyses. In some cases, these assumptions are ones generally shared by the generative community and thus may perhaps be happily taken on board. In other cases, the assumptions are unique to his analysis, and are in some cases radically counter-intuitive. I highlight in the text that follows the assumptions which underlie his program.

Pollock compares the auxiliary system of French and English. He assumes, for the purposes of argument, the following structure:



This structure makes the correct predictions in terms of linear order for the following French sentences, assuming the verb raises to I(NFL). However this structure does not produce the right results for English. Consider the following data:

(1a) *Jean likes not Mary.

(b) Jean n'aime pas Marie.

(2a) *Likes he Mary?

(b) Aime-t-il Marie?

(3a) *Jean kisses often Mary.

(b) Jean embrasse souvent Marie.

(c) Jean often kisses Mary.

(d) *Jean souvent embrasse Marie.

(4a) *My friends love all Mary.

(b) Mes amis aiment tous Marie.

(c) My friends all love Mary.

(d) *Mes amis tous aiment Marie.

The structure above and a posited difference in the scope of Verb Movement account for the data in (1-4). In English the verb cannot move over *not, often* or *all*. For the data in (2) we must

analyze AUX-NP inversion as movement to the left of INFL (head movement of INFL to COMP as in Chomsky 1986a). Given this set of data, Pollock then proposes that in French the lexical verbs move to INFL but not in English.

Pollock then makes the following assumption: neither language allows for Adverb Movement to the right. This assumption then forces him to move elements over the adverbs, leftwards. This is the first point at which we differ with Pollock's analysis. In Cann & Tait (1990) an analysis of verb raising in English is posited, which makes use of the X' adjunction sites for adverb movement. The intuition behind this is that the X' adjunction structure was originally introduced into the early X-Bar system as a site of adjunct attachment. Further, the distributional evidence suggests that adjuncts are much freer in their occurrence than are complements or specifiers, and indeed appear in positions suggested to be X' adjunction sites by the linear order of constituents.[1]

Pollock assumes further that verb movement to INFL in French is obligatory. What forces this movement is never made clear. It could be some form of the Stray Affix Filter, requiring the stranded affix in INFL to be attached at PF. If this is the case, then it should also extend to English where there is at least one affix originating in INFL, the third person singular present tense agreement morpheme *-s*. He then uses the following data to motivate this difference between French and English. In (5a&b) we see that the negative is a barrier to movement, either of the verb to INFL, or of the affix down to the verb, thus necessitating Do-support. The French data, however, shows the finite verb appearing to the left of the negative *rien*.

(5a) John is not happy.

(b) *John does not be happy.

(6a) Pierre n'a rien mange'.

---

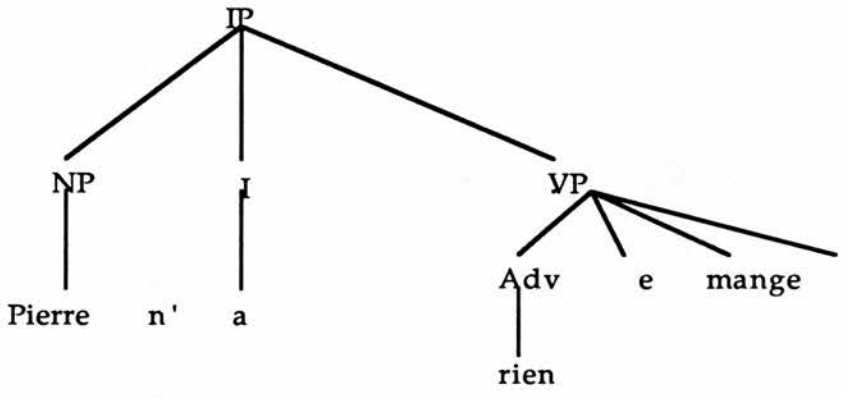
[1]We may further consider an extension to the Barriers framework where we would consider the X'-XP node together to constitute a barrier (as in the case of VP which is an inherent barrier). By allowing adjuncts to adjoin to an X' level, we effectively allow them to escape any barrier which the X'-XP may have set up. This would then predict that objects appearing in [NP,V'] would be harder to extract than indirect objects appearing in [SPEC, VP] as the former objects would be dominated by both V' and VP, thus a complete barrier, where the latter are only dominated by VP, an incomplete barrier. This suggested analysis to some degree extends the adjunction structure analysis of May (1985) to the internal adjunction positions.

(b) *Pierre n'a mange' rien.

(c) Pierre ne mange rien.

(d) *Pierre ne rien mange.

Pollock must then assume that *rien* has moved to the front of VP. Verb to INFL movement disguises this at S-structure.



Unfortunately, Pollock cannot extend his head-SPEC analysis of *ne pas* to *ne rien* and thus has no way of accounting for their dependency in these constructions. He treats *rien* here as an adverbial NP within the VP.[2]

(7a) He hasn't understood. /Has he understood?

(b) Il n'a pas compris. /A-t-il compris?

(c) He is seldom satisfied. /They are all satisfied.

---

[2]Following the intuition that *rien* acts as the object of the verb *manger*. However, note that he does not represent it as the object within the tree structure, but rather as an NP adverb. The question then arises whether it should be generated in [SPEC, NegP] as we will soon see that *pas* is. If this is the case, then we have another instance where an argument appears in one of these Affixal SPEC positions, as does the subject in Italian in the analysis of Tait & Cann (1990). This analysis does not seem too promising, as it will entail great difficulties of case and theta-assignment. The alternative would involve either raising of an abstract 'something' to [SPEC, NegP] under certain conditions, or base-generating *ne rien* in the object position and then raising *ne* to some higher SPEC position.

(d) Il est rarement satisfait. /Ils sont tous satisfaits.

Pollock uses the data above to demonstrate that *have* and *be* can move to INFL in English. He then considers the following problems with the account given thus far.

A. Why is Verb Movement to Infl lexically restricted in Modern English?

B. Why can't Affix Movement apply in French tensed clauses?

C. Why does UG allow for Affix Movement, a lowering rule?

D. Why does the negative particle not block Affix Movement whereas other (negative) adverbs do not?

E. Why is Verb Movement obligatory whenever it can apply?

Pollock then considers the question of verb movement in infinitives. In English, there is no morphological reason to postulate the need for verb movement in the case of a non-finite INFL, as the infinitive marker *to* is a free morpheme and thus not subject to the Stray Affix Filter. It could be further argued, given the evidence of split infinitives in colloquial speech that the verb must not move to INFL. In the Romance languages, however, the infinitive verb takes a special non-finite suffix.[3] Thus generalizing the verb to INFL movement to all cases is better motivated by the data for French.

Pollock then assumes that infinitives differ from finite clauses only in the feature composition of their INFL and COMP. It is not clear why he doesn't consider the possibility of treating [+Finite] as something which projects syntactically. He further claims that *not* and *ne-pas* stand in the same structural position in tensed clauses, infinitives and gerunds. We will assume that by 'structural' he means at D-Structure. Consider now the following data containing non-finite sentential subjects.

(8a) Ne pas etre heureux est une condition pour ecrire des romans.

Not to be happy is a prerequisite for writing novels.

---

[3]And in the case of Portuguese, an agreement suffix in some constructions.

(b) N'etre pas heureux est une condition pour ecrire des romans.

(c) Ne pas avoir eu d'enfance heureuse est une condition pour ecrire des romans.

Not to have had a happy childhood is a prerequisite for writing novels.

(d) N'avoir pas eu d'enfance heureuse est une condition pour ecrire des romans.

This data supports the deep structure given above. (8a-b) show that *etre* can but need not move to [-finite] INFL. (8b&d) are "considered somewhat literary and 'recherche'" according to Pollock.

This suggests an answer to Question D above, that is, the obligatoriness of movement correlates with the presence of [+finite]. However, as the following data show, this movement is restricted to verbs of certain classes in French.

(9a) Ne pas sembler heureux est une condition pour ecrire des romans.

Not to seem happy is a prerequisite for writing novels.

(b) *Ne sembler pas heureux est une condition pour ecrire des romans.

This data shows that this possibility of movement is restricted to auxiliaries and lexical *avoir*.

Pollock then turns his attention to infinitives in English and makes the assumption that in English *to* is base generated in [-finite] INFL. Pollock further assumes that *to* can, but need not, be moved by Affix Movement, which adjoins it to VP at S-Structure. The following data illustrate *to* remaining in INFL, thus appearing before the *not*.

(10) John wants to not go.

(11) Peter expects his friends to not object to his proposals.

If the rule applies then the following sentences are generated.

(12) John wants not to go.

(13) Peter expects his friends not to object to his proposals.

(14a) Not to be happy is a prerequisite for writing novels.

(b) ?To be not happy is a prerequisite for writing novels.

(14b) is an example of Verb Movement to INFL with *to* standing in its D-Structure position.

(15a) Not to seem happy is a prerequisite for writing novels.

(b) *To seem not happy is a prerequisite for writing novels.

Pollock then concludes that verb movement to INFL obeys the same lexical restrictions in non-finite as in finite clauses. In the case of French, Pollock's analysis makes the following prediction: since Verb Movement is never obligatory in infinitives there should be well-formed sequences such as:

Adv+V+NP

Q+V+NP

These are illustrated in the following data:

(16a) A peine parler l'italien apres cinq ans d'etude denote un manque de don pour les langues.

To hardly speak Italian after five years of hard work means you lack a gift for languages.

(b) Souvent paraitre triste pendant son voyage de noce, c'est rare.

To often look sad during one's honeymoon is rare.

(17a) On imagine mal les deputes tous demissionner en meme temps.

It is hard to imagine the representatives all resigning at the same time.

(b) J'ai entendu mes enfants chacun raconter une histoire differente.

I have heard my kids each tell a different story.

(18a) *Pierre a peine parle l'italien.

Pierre hardly speaks Italian.

(b) *Mes enfants chacun raconterent une histoire different.

But, compare the following:

(19) Parler a peine l'italien apres cinq ans d'etude denote un manque de don pour les langues.

(20) On imagine mal les deputes demissioner tous en meme temps.

(21) *Ne comprendre pas l'italien apres cinq ans d'etude . . .

(22) *Apres ce scandale, on voit mal les deputes ne demissioner pas.

This data raises a problem for the analysis. We might have imagined that sentences of the form

Lexical V+Adv+Complements

would be ungrammatical. We aren't letting the lexical verb move to INFL, and we have claimed that there is no rule of Adverb Movement that is left-wards. If the adverbs in (19) are generated in the VP initial posiiton, then there must be a different Verb Movement rule, moving the nonfinite verb to some intermediate position before the negative adverb *pas* . If the adverbs are generated in VP final position we could derive the order of elements in (19-22) by a rule moving the object to the right (adjoining it to VP).

$$[_{IP}\ NP\ \ Infl\ [_{VP}[_{VP}\ V\ \ e_i\ \ Adv]\ NP_i]]$$

Pollock claims that there is evidence for both processes in French in order to account for adverbs such as *a peine* and *presque* (VP-initial), and *hier, aujourd'hui,* and *demain* that are never VP initial.

So to complete his analysis, Pollock must posit the following rules for French: (1) Auxiliary Verb movement to INFL, which is obligatory in tensed sentences and optional in infinitives; (2) Lexical Verb movement to INFL, which is obligatory in tensed sentences and impossible in infinitives; (3) "Short" Verb Movement (moving a verb to some position between the negative adverb and the VP-initial adverb position (applying to lexical verbs and auxiliaries alike); and (4) Scrambling, which adjoins an object NP to VP, rightwards.

In the case of English, Pollock must posit the following rules; (1) Auxiliary Verb movement to INFL, which is obligatory in tensed sentences and marginally acceptable in infinitives; and (2) "Short" Auxiliary Verb movement. So, there is a correspondence in that verb movement to INFL in tensed clauses is lexically restricted if short verb movement is as well. Given these results Pollock considers the following hypothesis: Verb Movement to INFL is never a one-step process. The following labeled bracketing illustrates a two-step movement process.

$$[_{IP}\ NP\ [_{I}\ V_i]\ (pas/not)\ e_i\ [_{VP}\ (Adv)\ t_i \ldots]]$$

Pollock assumes that this rule of Verb Movement which we have been considering the evidence for is an instance of head movement and thus it obeys the Head Movement Constraint (HMC) given below:

> Movement of a zero-level category β is restricted to the position of a head α that governs the maximal projection γ of β, where α θ-governs or L-marks γ, if $\alpha \neq$ Comp.

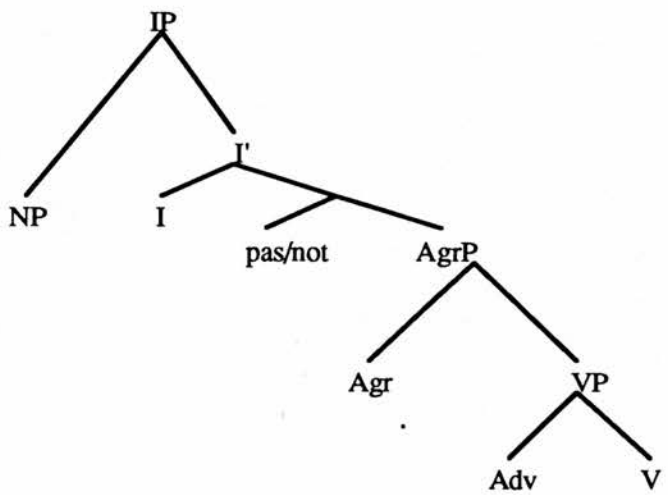
Given this, our proposed verb movement 'hops' will be an automatic consequence of the existence of the HMC in Universal Grammar, as a direct jump to INFL would violate the ECP. That is, by considering Verb Movement to be an instance of Head Movement, it thus comes under the ECP. This requires all traces to be properly governed. The trace of a verb cannot be lexically governed, so it must be antecedent governed. In this case, the antecedent governor will be constrained as to its location in the tree relative to the trace by the existence of intervening barriers. Although Pollock is not clear on this point, nor is his structure very detailed, we can assume that the head of the NegP, *pas*, would be a closer possible governor through Minimality.[4] However, Pollock does not consider the issue of whether or not verb movement leaves a trace at all. Traces are required by the Projection Principle, but it is not clear whether verbs themselves should fall under the Projection Principle. It could be argued that not all movement leaves a trace behind, only movement of 'arguments'.

Pollock then considers what can be the category of this intermediary landing site. He proposes, then that short verb movement must be movement to AGR.

---

[4]If we assume Rizzi's version of Relativized Minimality (Rizzi 1990) then we may be able to argue that a negative is not a possible governor for a verb trace.

Assume that Agr is a category in its own right, distinguished from Tense, which is the head of INFL.[5] This assumption is warranted in that it follows from his general program of positing projections of affixes. The major effect here is to distinguish the two properties that have been associated with INFL in previous analyses. Although in English Tense and Agr have syncretized, there is enough evidence in other languages to tease them apart. The following tree diagram illustrates the structure which Pollock postulates:



AgrP is a complement of INFL. Both AgrP and VP have a specifier position which is not shown here. Now the problem of accounting for the lexical restrictions on Long Verb Movement will be solved if we can just prevent them from getting to Agr. Pollock suggests that the answer lies in Theta-theory.

Pollock 's argument goes as follows: Verb Movement to Agr or to Tense (I) is either free of any lexical restrictions or only applies to *have/avoir* and *be/etre*. Note that these can arguably be said to fail to assign any theta-role to their complements. Therefore, there must be some correlation between needing to assign a theta-role and being able to move. Lexical verbs need to assign them and can't move, Auxiliaries don't need to and can move. Therefore, Verb Movement creates structures that block theta-role assignment.

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[5]So that tense is the head of TP, and Agr is the head of AgrP.

The ungrammaticality of examples like (9 b, d), then follows from a violation of the Theta-Criterion, given below.

> The Theta Criterion: An argument bears one and only one theta-role, and each theta-role is borne by one and only one argument.

Let us consider why this might be the case. Chomsky (1986a) defines Verb Movement as an adjunction to a head.

$$[_{Aff}\ [V]\ Aff]$$

Pollock claims that this structure in Agr blocks theta-role assignment. Pollock then claims that Agr in English (unlike Agr in French) is not 'rich' enough morphologically to permit transmission of the verb's theta-roles.[6] This gives the following dichotomy between English and French:

> English Agr is opaque to theta-role assignment.
>
> French Agr is transparent to theta-role assignment.

However, Pollock must then claim that Affix Movement creates a structure crucially different from that above. He gives the structure created by Affix Movement below:

$$[_{V}\ V\ Aff]$$

Here, despite the fact that Agr in English is opaque to theta-role assignment, nothing will prevent the verb from assigning its theta-grid. Therefore, Affix Movement 'rescues' structures that would otherwise be excluded. Here we may complain that the structure above is not interpretable in X-Bar Theory, and is therefore not available to the learner.

Consider the structure resulting from movement of Agr to Tense, as illustrated in the following labeled bracketing:

---

[6]This assumption stems from one generally used in analyses of null subject phenomena, which posits a difference in 'richness' of Agr to account for the presence of null subject constructions in languages with an extensive agreement system.

$$[_{T}\ [_{Agr}\ V\ Agr]\ T]$$

Pollock must then assume that [-finite] Tense is also "opaque" to theta-role assignment. This then accounts for the lexical restriction on Agr to Tense movement in French infinitives. But consider the following problem data for this analysis:

(23a) Etre ou ne pas etre, telle est la question.

(b) Etre ou n'etre pas, telle est la question.

(24a) Ne pas avoir de voiture en banlieue rend la vie difficile.

(b) N'avoir pas de voiture en banlieue rend la vie difficile.

(c) John doesn't have enough money.

(d) John hasn't enough money.

For this set of sentences Pollock must claim that whatever R-expressions are contained in those sentences are theta-marked by something other than the moved verbs. Note that these are bad if you replace *etre* by *exister*, *avoir* by *posseder*, and *have* with *own*.[7]

Pollock assumes then the existence of an empty locative to do this as illustrated in the following:

$$[_{TP}\ PRO_{i}\ ne\ T\ pas\ Agr\ etre\ [_{SC}\ e_{i}\ Loc]] \ldots$$

(25) Jean a une voiture

Then the sentence above must have the deep structure:

$$[_{S}\ NP_{i}\ a_{j}\ e_{j}\ [_{SC}\ P\ e_{i}\ [une\ voiture\ Loc]]]$$

---

[7]Note, there is a PRO in the subject position of the infinitive that must receive a theta-role.

Pollock comments:

> In (25) the two R-expressions *Jean* and *une voiture* are theta-marked by the phonetically null preposition P and the abstract predicate Loc, respectively. (p388).

Here we have an analysis which is so flawed that it is difficult to know where to begin a critique. Perhaps the simplest ground lies in the adoption of a program of research which places severe constraints on the sorts of empty categories which can be postulated. I return in a later section to a fuller treatment of the PFLP, which is the manifestation of this constraint in the theory I am developing. Note, however, that the structure of the small clause in example (25) above is different from any structure for a small clause previously put forward. Also, the movement of *Jean* to subject position crosses several barriers, including the Small Clause, and the VP, both inherent barriers. Further, if the abstract preposition P can assign a theta-role, why can it not also case-assign? In general, prepositions are case-assigners more frequently than they are theta-role assigners. Does Loc assign case to *une voiture*? Clearly it must, as nothing else can and *une voiture* must be case-marked in order to satisfy the Case Filter.

Theta-theory is the module of Universal Grammar that is responsible for the lexical restrictions that bear on Verb Movement to Agr in English and to [-finite] tense in French. Theta-role assignment is blocked by the morphologically poor Agr of Modern English (it is opaque to theta-role assignment). This answers Question A. What about the other questions?

The [+/- finite] dimension to Tense plays a crucial part in the answers to the remaining questions. [+finite] Tense requires Verb Movement to (Agr to) Tense, prohibits Affix Movement in French, and turns *not* into a barrier for Affix Movement in English. [-finite] Tense does not require Verb Movement, does not prohibit Affix Movement and allows *not* not to count as a barrier for Affix Movement. Pollock solves this by claiming that [+finite] Tense is an operator. This requires [+finite] (or [+/- Past]) to bind a variable. He defines such a variable as follows:

> a is a variable for [+/- Past] iff a = $[_{V_i}$ e] bound by [+/-Past]

Intuitively, Verb Movement to INFL in tensed clauses and WH movement are similar in that they each provide an abstract operator with an appropriate variable. The variable defined above can be seen as a sort of 'event' variable a la Davidson. The problems with this analysis are obvious. In a restricted application of Government and Binding Theory such as is discussed in this thesis, we must restrict the use of PF-invisible operators, particularly such ill-

motivated ones as Loc and P in the example above. One of the clear semantic problems with this analysis lies in the interpretation of the 'event variable'. Such a variable in the accounts of such as Davidson is interpreted as an argument of the verb. If this is the case, then this event variable is protected by the Projection Principle, and also must be present in the argument structure of every verb. This variable then cannot be interpreted as the trace of the verb itself. That sort of interpretation would yield gross semantic ill-formedness. Further, the verb trace would then be doubly bound, both by the abstract Operator [+Finite], and by the raised verb itself.

Now we turn our attention to the analysis of English, given the developments sketched above. How to reconcile the above with:

(26) John left.

in which we know affix movement has applied. If we claim that [+/- Past] is not an operator in English we would get (26), but should also expect

(27) *John not left.

And Verb Movement should always be optional. Pollock responds:

> We now seem to have worked ourselves into a pretty desperate situation: quantification theory requires Verb Movement to [+/- Past], but theta-theory and the ECP, because of the opacity of English Agr, forbid it. When they are in a predicament of this sort, it seems to me that UG leaves the grammars of individual languages essentially two possible ways out. (p 396)[8]

These are: (1) go one notch farther down on the poverty line of their Agr and get rid of it entirely; or (2) allow an auxiliary verb generated beyond the VP barrier to count as a substitute for the immovable main verb in the VP. Some Scandinavian languages chose option 1, English chose option 2.

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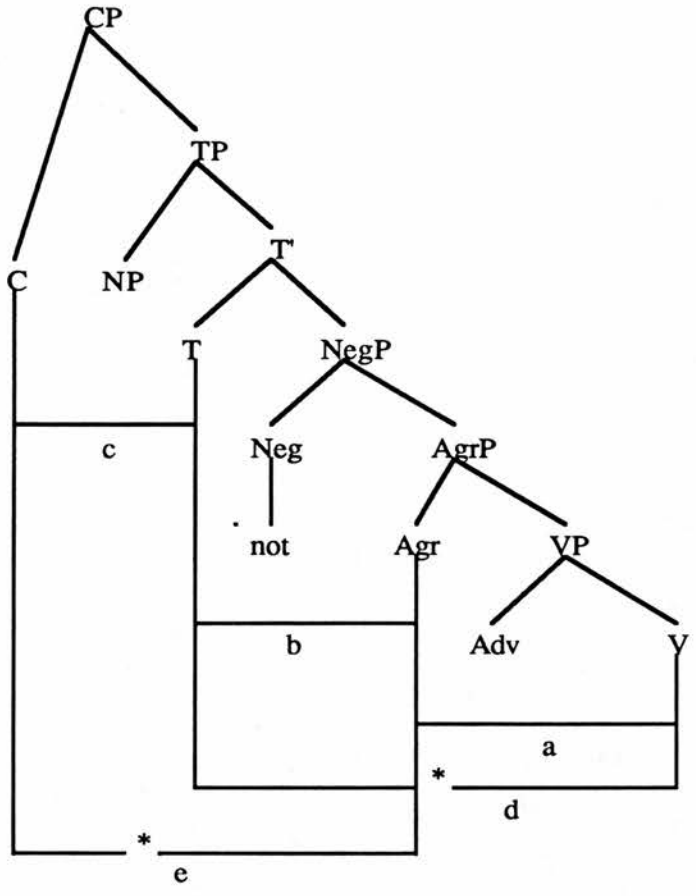
[8]The rhetoric of this quote is very interesting, as it starts out with the author experiencing discomfort, and finishes with the languages themselves in a difficult position.



The tree above illustrates the structure of Negative Sentences in English. Note there is NegP as well as the other maximal projections. Again, some specifier positions have been omitted.

Pollock then assumes that VP, NegP, and TP are "inherent" barriers. Because it is morphologically "defective" AgrP is only a barrier by inheritance (like IP used to be). Here we find that Pollock has introduced two more barriers between the VP and the CP. This will have serious consequences for movement and government, unless further adjunctions are allowed. Pollock does not discuss this. Pollock assumes further that heads are intrinsically inert for government, as Neg probably is (if it is a head at all) and thus do not count as potential intervening head governors for the minimality principle (cf Rizzi 1990). Thus *not* does not block movement from Agr to Tense (at least in non-imperative sentences). This use of 'heads' must only refer to the affixal heads which are now being postulated as having syntactic projections. Non-affixal heads would still have to count as possible closer governors, otherwise the Minimality Principle would be vitiated completely. The HMC requires Verb Movement to Agr,

Agr to Tense, and Tense to Comp (a, b, and c above), but prohibits direct movement of V to Tense or of Agr to comp (the d and e arrows).

Pollock notes that a difference exists between negative constructions of the following kind in French:

(28) *Pierre dit ne manger pas.

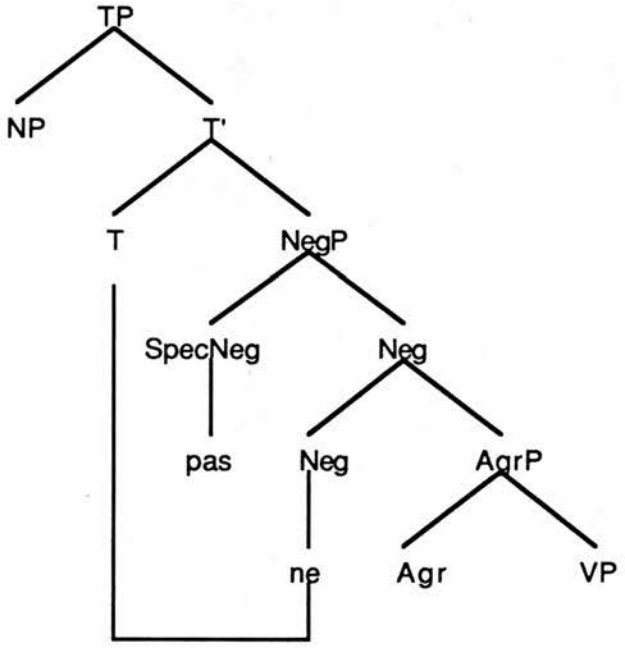
(29) (?)Pierre dit ne manger point/plus/rien[9].

Further, infinitives allow *ne pas*, participles do not.

(30a) Pierre dit ne pas manger.

(b) *Pierre a ne pas mange.

Pollock proposes the following structure to account for these facts:



[9]Question mark in parentheses denotes an example that is perfect, but that has a "slightly literary ring". (Pollock p. 413)

Thus *ne* is the head of the negation phrase in French, with *pas* as specifier. Pollock further assumes that *point, plus,* and *guere* are specifiers of a negative adverbial position in VP-initial position, with *ne* again as head. *ne* is also the head of a negative NP generated in an A-position, with *rien* as specifier. Because *ne* is a clitic, it must move to TENSE position. Because participles do not have a TENSE position, cliticization within the participle itself is impossible. If *ne* originates within the VP, it cannot cliticize out, as VP is a barrier. Because *ne* is a head, it cannot adjoin to VP to escape, as only phrasal elements can do so. However, the entire NegP can adjoin to VP to escape.

(31a) Il (ne) faut rien que tu dises.

it ne must nothing that you say

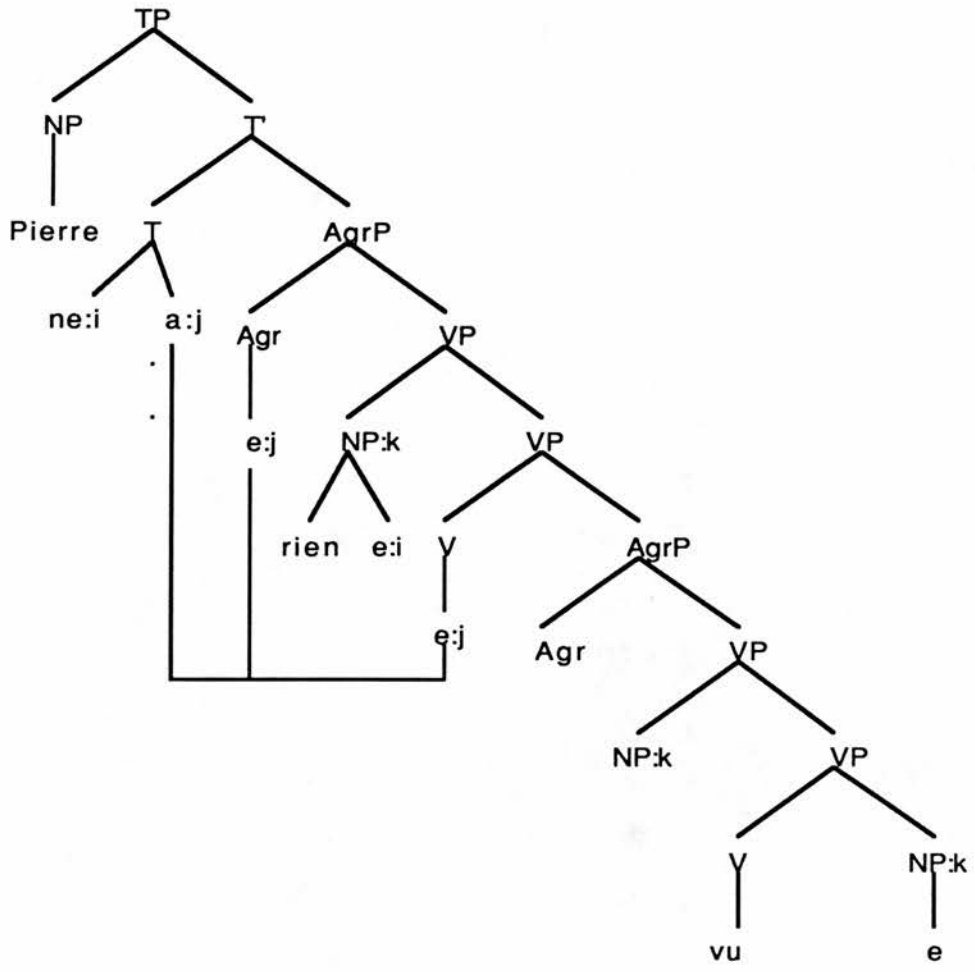
'You mustn't say anything.'

(b) Il ne faut plus que tu parles.

it ne must more that you speak

'You mustn't speak anymore.'

As illustrated in the following tree diagram:



Adjunction to the higher and lower VPs voids barrierhood. *ne* can move to TENSE without violating the ECP since the trace of *a* L-marks VP.

In the case of *ne personne*, Pollock claims that this is not a constituent, unlike the other negative phrases. *personne* is claimed to be the head of its NP, and *ne* is base-generated in the specifierless NegP above the participial small clause.

This analysis attributes the present properties of Verb Movement in English to the loss of a morphologically "rich" system of agreement inflections, thus yielding AGR opaque to theta-role assignment. From this followed the loss of the previous general Verb Movement to AGR to TENSE, which then became available as an option only to *have* and *be*. Pollock, agreeing with Roberts (1985), attributes this change particularly to the loss of plural agreement. French

retained this plural agreement and thus the AGR in French remained sufficiently "rich" to allow transparency for theta-role assignment.

4.1.2.2. Conclusion

Starting from the observation, first proposed in Chomsky (1955) that Tense and Agreement should be analyzed as separate syntactic entities at an abstract level of representation, Pollock considers an extensive set of data involving auxiliaries in French and English and concludes the following:

> (a) There exists an AgrP in French and English. It is "defective" in (Modern) English (that is, is not an inherent barrier) but not in French. AgrP in both languages is a complement of Tense or Neg. (b) IP, the entity traditionally called "sentence", should be analyzed as TP and seems to be an inherent barrier. If true, this will have a variety of consequences for the analysis of Case Assignment and proper government of subject NPs, to name just two areas for which this idea has consequences. (c) There exists a NegP in both languages, also an inherent barrier. (pp 420-421)

At this level of abstraction, one begins to wonder where it will all end, and one is reminded of earlier, more abstract syntactic analyses (e.g. generative semantics). In a footnote on page 421 Pollock suggests that the above analysis of *not* as head of a NegP in English could be replaced by positing the existence of an Assertion Phrase, which would be headed by *do*, and which could have *so* as a positive specifier, and *not* as a negative specifier. Otherwise, problems arise with Pollock's analysis of NegP in English, forcing an adoption of some version of Rizzi's Relativized Minimality, as *not* doesn't block movement of *be/have/do* to TP, thus *not* can't be a closer governor of the proper kind. Alternatively, he considers treating *not* as specifier of a NegP with an empty head. Verbs could then move through the empty head position and an absolute version of Minimality could be retained.

As we have seen in part, there are many unresolved problems with the analysis of Pollock. These include: (A) The necessity for postulating the existence of too many empty elements. Pollock introduces four new empty categories or constructions which have no visible reflex at S-Structure, and which fail to satisfy the PFLP: (1) empty prepositions assigning theta-roles; (2) empty **Loc** predicates assigning theta-roles; (3) small clause structures in unusual places; and (4) a non-lexical form of *do*. (B) The necessity for postulating several new movement rules which have no independent motivation in the grammar: (1) two types of verb movement; (2) Affix movement; and (3) Scrambling. Pollock's account, while suggestive, employs much too

unconstrained a version of Grammar and is thus unavailable for adoption in the program outlined in this thesis.

The main contribution of Pollock lies in his very interesting expansion of IP into various syntactically active components.

4.2. *Chomsky's Revision of Pollock*

In an unpublished manuscript (Chomsky 1988) Chomsky proposes some revisions to Pollock (1989) and considers them in the general light of the development of linguistic theory. In particular, Chomsky considers the existence of certain "guidelines" which control derivations, but which are too generally formulated to be considered to be principles of Universal Grammar. These guidelines usually have an element of favoring "least effort" in derivations. They can be seen as the operating system in an otherwise modular theory, controlling the interaction of different components. They also involve a certain amount of "global" constraint. I return to this latter issue.

Chomsky concerns himself mostly with X^0 movement. X^0 movement, or Head movement as it is sometimes called, falls into two major categories: (1) the formation of complex predicates (e.g. noun-incorporation, causatives, applicatives, cf Baker 1988); and (2) inflectional morphology, which includes Verb Raising to INFL and INFL-Lowering to Verb (aka Affix-Hopping)[10]. From all accounts thus far, the central fact concerning Head-Movement is the Head Movement Constraint, and the central question associated with this fact is whether it is reducible to general constraints on syntactic movement[11], for example, the ECP. Both Pollock and Chomsky start from Emonds' analysis of Verb Movement, which claims that in French the Verb Raises to attach to INFL, but in English the INFL lowers to attach to the Verb (Emonds 1978, 1985). This analysis predicts, among other things, the correct order of VP adverbs in both languages. However, in English, as Pollock noted, *have* and *be* act like French verbs. This could be

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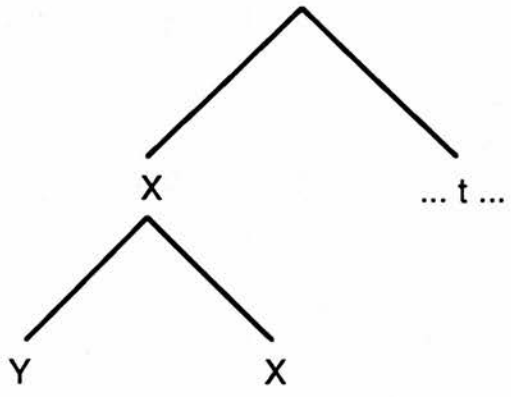
[10]Chomsky never considers whether in fact Affix-Hopping (that is, the rule Lowering INFL to the Verb) is strictly necessary. I provide arguments in a later section in favor of eliminating the possibility of syntactic lowering rules entirely from the grammar (see Ouhalla 1990 for another treatment of the auxiliary system which assumes the unavailability of lowering rules to the grammar).

[11]If not, this would be evidence for Head Movement being a morphological process, or at least a process affected by specific rules relating to Morphology Theory (cf Borer 1988).

interpreted as the "weak" AGR of English attracting only auxiliary verbs, whereas the "strong" AGR of French attracts all verbs[12]. Two proposals as to why this should be the case have been made; (1) Lasnik has proposed that there is a morphological property involved which supports (or doesn't support) "heavy" elements; (2) Pollock derives this difference from differing potentials of theta-role transmission (see above).

There are thus two possible adjunction structures resulting from Head-Movement, depending on whether it is a raising or lowering operation.



The structure above illustrates the case where Y raises to adjoin to X. In this structure, t is the trace of Y. The theory of Government allows Y to govern its trace, in order to satisfy the ECP. If Y cannot be governed from outside of X, then Y cannot undergo successive cyclic movement further upwards. The chain (Y, t) is therefore properly formed, and if Y is a theta-marker then the trace t of Y must be able to transmit the theta-marking potential of Y. This is possible, according to Pollock, if X is "strong", but not if it is "weak". Thus if Y, a verb, adjoins to a weak X a weak Theta-Criterion violation results.[13] The structure formed by this raising operation is well-formed according to X-Bar, assuming Chomsky Adjunction. It is also well-formed according to theories of word formation which include a rule requiring the right hand element to be the head, at least in English (cf. Di Sciullo & Williams 1987).

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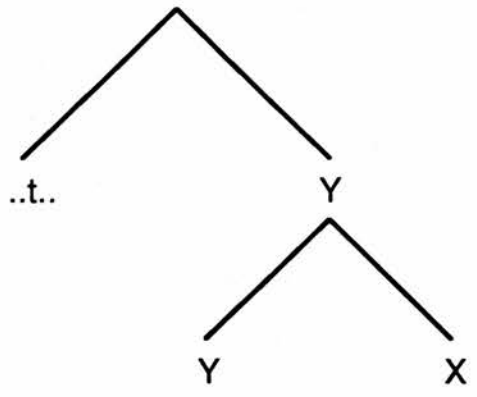
[12]The notion of "attraction" is necessary to explain why this movement occurs. The Stray Affix Filter can be used to motivate some cases of movement, but in cases where there are no overt affixes in AGR to be picked up, without a notion of attraction the existence of a phonetically null affix which is still subject to the Stray Affix Filter must be postulated.

[13]Presumably, some other process blocks the raising of any verb which is not a theta-role assigner, such as "weather" verbs. (Observation due to Anna Gavarro).

Consider now the alternate structure formed by lowering INFL to the Verb.



Here the category X has lowered to adjoin to Y, leaving its trace t behind. In this structure we must assume that adjoining X to the right of Y has no effect on the category Y, particularly in terms of its ability to assign theta-roles. Note that this structure, necessitated by allowing a lowering operation in the grammar, is not well-formed in terms of principles of morphology, in particular direction of headedness. Further, as pointed out by Cann & Tait (1990) this movement must be potentially unbounded.

To return to the question of how movement is motivated, and of how one possible derivation can be prioritized above some other possible derivation, let us consider again the structure Pollock proposed to account for the Verb Raising data in English and French.[14]

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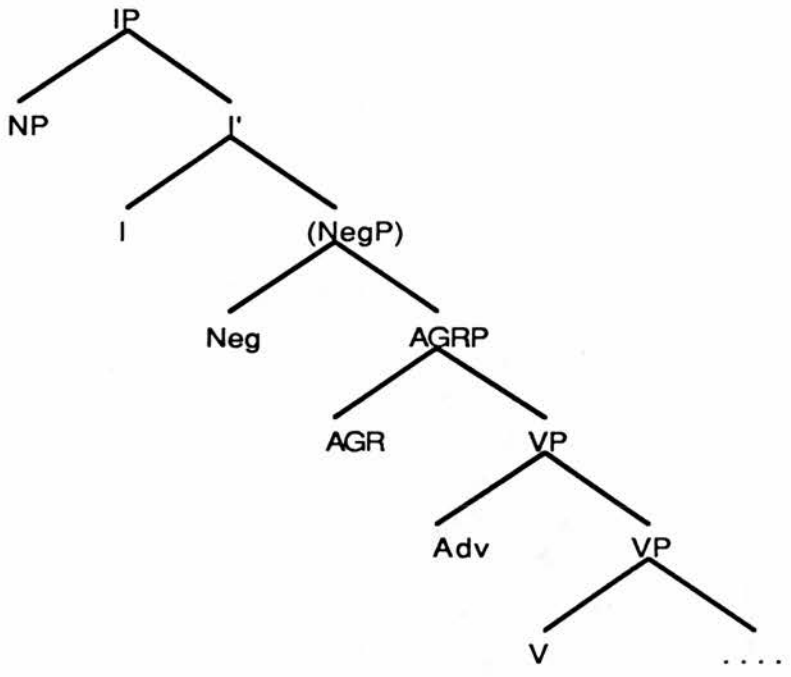
[14]The account that follows, from Chomsky 1988, p. 6-7, differs in some details from that of Pollock.



Here I may be [+/- Finite] and Neg is English *not* or French *pas*. The separation that results from this analysis of Tense (or INFL) and AGR eliminates the "odd dual-headedness" of INFL in earlier treatments. Chomsky assumes that infinitives have (generally) vacuous AGR.

In the case where the verb raises to AGR the surface structure order V-Adverb-Object results (English auxiliaries and all French verbs). If AGR lowers to V, the order Adverb-V-Object results (English non-auxiliary verbs). If the verb first raises to AGR, and then this complex raises to INFL, the following forms result:

(32a) John has not seen Bill.

(b) Jean (n')aime pas Marie.

If the verb raises to AGR, but if then blocked from raising to NFL, the following results:

(33a) ne pas sembler heureux

(b) n'etre pas heureux

These properties follow from the assumption that [+finite] is strong, and thus attracts raising to INFL, whereas [-finite] is weak, and does not so attract. However, in French, though the verb-

raising rule is obligatory for tensed clauses, it is optional for infinitives, thus the following are also grammatical:

(34a) ne pas etre heureux

(b) souvent paraitre triste

In the former, *etre* has not raised over Neg to [-finite] INFL, and in the latter, *paraitre* has failed to raise over the adverb to adjoin to AGR.

This account relies on raising happening if at all possible and this could be seen as resulting from the preference for short derivations over long ones. That is because the lowering operation must involve a further raising rule at LF, in order to properly govern the trace left by the item moved downward.[15]

However, the definition of "least effort" in the matter of this preference for shorter derivations cannot come down to merely counting steps in a derivation.[16] Consider the following analysis of interrogatives. Assume that interrogatives are indicated at D-Structure by the presence of a phonetically null complementizer Q which is [+WH]. The presence of this complementizer thus triggers the proper intonational structure at PF, and the proper interpretation at LF. If this Q is treated as an affix, then the Stray Affix Filter will ensure that Head Movement occurs, thus raising some lexical element to adjoin to Q. Given the following D-Structure, certain problems emerge:

(35) Q John INFL AGR write books.

If Lowering were to take place, AGR and INFL would lower to the verb, leaving traces in their D-Structure positions, the sentence would be indistinguishable from the corresponding declarative, and Q would not be morphologically licensed by attachment. English solves this

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[15]Recall that traces must be c-commanded by their antecedents, at least at LF. Thus if anything should happen to move downwards in a tree, it must raise to its original position at LF in order to satisfy the Binding Theory. A more restrictive interpretation doesn't allow lowering, and thus bars such "recovery operations" at LF.

[16]That is, any attempt to return to the Derivational Theory of Complexity would be in error as that view was over-simplified.

problem by using "*do* support".[17] That is, the dummy element *do* is inserted to bear the affixal Q, and INFL and AGR raise to adjoin to *do*. Assume further that this *do* is inserted in the position of the modal. However, if this analysis is correct, then it wrongly predicts that *do*-support should occur freely, giving *John did write books* preferentially to *John wrote books*, as the latter requires lowering of INFL and AGR to the verb, and their subsequent raising at LF to properly govern their traces. This suggests then that the least effort principle must be interpreted relative to whether or not rules are available to Universal Grammar, or are language specific, with the language specific rules (such as *do*-support) only used to "save" an otherwise ungrammatical sentence. Thus the rules of Universal Grammar are less costly than language specific rules.[18]

4.2.1. Deletion

The analyses which Chomsky develops in this paper require him to consider in some detail what is involved in the process of deletion. Following Lasnik and Saito (1984), deletion can be employed to get rid of traces which might otherwise yield ECP violations at LF. The analysis of deletion at LF which they suggest, and which Chomsky develops, is that any element not essential to interpretation at LF may be deleted there. The process of deletion itself is thus proposed by Chomsky to leave a category lacking features (dominating whatever material was deleted), designated as [e]. Thus deletion leaves a position but no features. If [$_{AGR}$ t], the trace of AGR, is deleted, it leaves [e], and:

> by X-bar-theoretic principles, the dominating category AGRP is now eP, an XP with no features." (1988 p. 10-11).

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[17]This is assumed to be a "language specific process contingent upon the weakness of AGR" (1988 p. 9).

[18]The problems which arise here with the interpretation of "least effort" and the various components of the grammar disappear if we assume, with Cann and Tait (1990) that lowering operations do not exist. However, a step of this magnitude could further suggest that it is not necessary to invoke a condition of "least effort" in order to choose between different possible derivations. A more restrictive theory does the work of this principle itself, limiting in the first instance the possible derivations available.

In footnote 25 Chomsky goes on to claim that e is an actual symbol of mental representation, but one lacking either phi or categorial features.[19]

Chomsky goes on to consider what elements are unnecessary at LF and can thus be deleted there. As suggested above, AGRP can be so deleted. He also consider [-finite] and its IP projection to be unnecessary and thus deletable at LF (1988 p. 12).

4.2.2. The Head Movement Constraint and the ECP

Whether or not the Head Movement Constraint reduces to the ECP has been an issue which several linguists have considered. If Head Movement cannot be subsumed under otherwise existent and more general rules of movement then that would suggest that principles of word formation, or morphology, are only partially integrated with principles of sentence formation. In some cases, the HMC clearly yields the same results as the ECP, in other cases, it is clearly more restrictive than the ECP. In this paper, Chomsky claims that the HMC is "descriptively valid only insofar as it reduces to the ECP" (1988 p. 12). Thus suggesting rather strongly that it is unnecessary. Chomsky arrives at this result by considering the derivation of the sentence below:

(36) John INFL neg AGR have written books.

Here raising of the verb *have* to AGR is permitted, and is thus obligatory by the "least effort" condition. This gives us [$_{AGR}$ V-AGR] and a V-trace. This complex element then raises to INFL over neg, forming [$_{INFL}$ V-AGR-INFL] and leaves an AGR-trace. This last step, raising over neg, violates the HMC as it is movement into a position which does not govern the extraction site (due to the presence of neg). Because the ECP is considered, since Barriers, to be a condition on chains, thus not applicable to the empty categories PRO, pro, and e, and because AGR-trace can then be deleted, no ECP violation arises.

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[19]Interestingly enough, exactly the opposite would follow from the adoption of PFLP applying to LF. The eP projection, containing no phonetic material, would not be PF licensed and thus would not be part of the sentential tree at LF. It is not clear if anything of interest follows from either interpretation of tree structures at LF, unless the eP of Chomsky's analysis would then make available landing sites for various movements, or would introduce barriers at LF. It would be obvious to assume that any eP would be incapable of L-marking the complement of its head.

Two crucial assumptions underly this analysis, as Chomsky points out. The first is that "unnecessary"[20] elements delete at LF. The second is that:

> D-structure relates to S-Structure by a directional mapping, a step-by-step derivational process. (1988 p. 12)

A superficial inspection of S-Structure and LF would seem to indicate that *have* is too far from its trace for the ECP to be satisfied, but the locality requirement has been satisfied internal to the derivation. This latter point would seem to seriously undermine the interpretation of the grammar as a declarative system lacking rule ordering and explicit statements governing the interaction of the various modules and principles of the grammar.

4.2.3. The Agreement System

The question arises of what is the proper ordering of elements in the deep structure tree, given that movement intervenes between D-Structure and S-structure, thus obscuring the underlying structure. Since AGR and INFL have been split in this system, the first question of this type that we can consider is the proper relationship between AGR and INFL (or finiteness) in the D-Structure tree. Pollock assumed that AGR is dominated by Tense, but there is other evidence to indicate that the reverse is true, and that AGR itself dominates Tense. Further, it might be fruitfully considered to govern the subject position (assuming this to be [SPEC, IP]).[21] Chomsky further cites "morphological evidence" from languages in which it is possible to distinguish the agreement affix from the tense inflection, and in which the agreement affix is "outside" the tense affix.[22] Remember that it is essential to Pollock's analysis to posit the existence of AGRP between Tense and VP, in order to get the correct ordering of elements and in order to license

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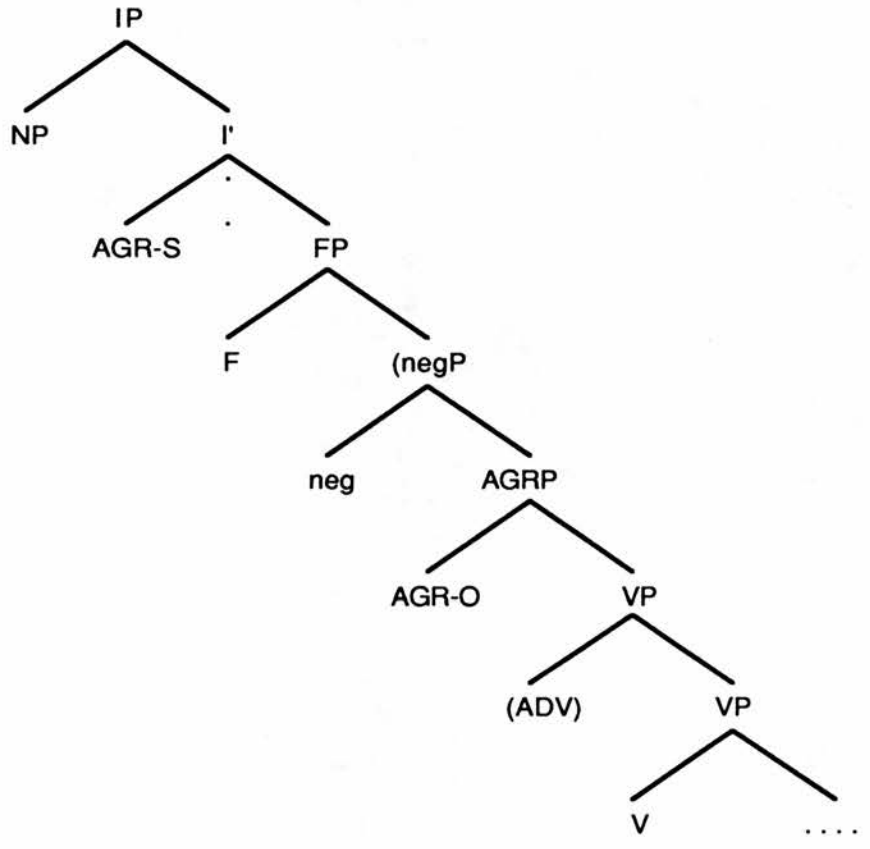
[20]And in general "unwanted".

[21]If the subject originates lower down, then Pollock's analysis would be more consistent with the desired result. This notion of AGR governing the subject is spelled out more fully in the analysis of Tait and Cann (1990) in which the subject arises in [SPEC, AGRP] in languages in which AGR projects. For languages, such as English, in which AGR does not project, it could be argued that AGR does not govern the subject.

[22]Chomsky doesn't list any languages here, he only cites an unpublished manuscript by A. Belletti, Geneva, 1988. However, it is easy to think of languages in which the converse is true, and the agreement affixes are "inside" the tense affixes, (e.g. Lakhota), or have syncretized with them (e.g. West Greenlandic, Georgian).

"short" verb movement. Chomsky, however, considers the evidence that there may be two agreement phrases, subject and object, with the Object Agreement Phrase close to the verb, and the Subject Agreement Phrase close to the position of the subject, and further from V. This would then suggest that the AGRP which Pollock uses in his analysis is actually ObjectAgrP. This step would make it unnecessary for infinitives to carry vacuous subject-agreement,[23] but would require the presence of an ObjectAgrP even in intransitives. This then suggests the following emendation to Pollock's tree structure, where AGR-S = INFL, the head of I' and IP, and F is [+/- finite].



This analysis is consistent with Kayne's (1987) analysis of participle agreement in a variety of Romance languages. Thus deep structures such as the following are licensed:

NP V_{aux} [$_{AGRP}$ AGR [$_{VP}$ V-participle NP]]

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[23]A result which would have been desirable for those Romance languages in which the infinitives display subject agreement.

If the object is a WH-phrase that undergoes raising then the participle may or may not agree with it. Kayne assumes these options correspond to the following two structures, where t and t' are traces of the moved WH-element *combien de tables*.

(37a) combien de tables [Paul a [$_{AGRP}$ t' [$_{AGRP}$ AGR [repeint- t]]]]

(b) combien de tables [Paul a [$_{AGRP}$ AGR [repeint- t]]]

In (a) the verb surfaces as *repeintes*, in (b) as *repeint* (lacking agreement). In the derivation of (a) the WH-phrase raises to the position of the trace t', adjoining to AGRP. In this position it can govern AGR, and thus assign its phi features to AGR.[24] In (b) no agreement occurs because the WH-phrase does not adjoin to AGRP, thus it doesn't trigger agreement. This structure also predicts agreement in the case of clitic objects, which could be argued to raise through adjoining to AGRP.[25]

(38a) Paul a repeint (*repeintes) les chaises.

(b) Paul les a repeintes.

Chomsky tentatively proposes that the clitic object may move to [SPEC, AGRP], and presumably from there to a higher position. The question then arises why the non-clitic object cannot raise to this position, [SPEC, AGRP], if it is available for a clitic object.[26] Base generation of the object in this position is barred if you assume theta-marking to be directional in French. Movement to this position can be disallowed through Case Theory (following Kayne

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[24]We will assume this to take the following form. VP is governed by AGR-O. If AGR-O has phi features passed on to it through the adjunction of the WH-object, then it assigns them to VP, and thence to the head of VP.

[25]However Kayne provides further arguments to indicate that the two agreement processes (WH-objects and clitics) are separate processes, and that the clitic does not adjoin to AGRP.

[26]An alternative would be to consider the clitic object to be an X^0 category, which would then only be able to move to another X^0 category. The clitic then would adjoin to the head of AGRP, thus having the correct feature-passing effect. The WH-object would adjoin to AGRP, as proposed above. The case of the full NP object would then be covered by proposing that in French the Object AGRP is a degenerate category (as in TAP in English (Tait and Cann 1990)) lacking a specifier position. Only languages with fully articulated object agreement would provide enough evidence for the learner to posit a non-degenerate Object AGRP.

1987) if you assume that case cannot be transmitted through chains, and that case is assigned rightwards by the verb in French. This does, however, leave the problem of case-marking the clitic object. Special rules involving cliticization are invoked by Kayne in his account to cover this case.

4.2.4. Agreement as a Specifier Head Relation

Koopman (1987) has argued that agreement is always the reflection of a specifier-head relation. She suggests further that this idea may relate to her earlier proposal (Koopman 1984) that the ordering parameters of X-bar involve two independent factors: directionality (1) of Case-marking and (2) of Theta-marking. Treatments of agreement in a theory without a well-articulated mechanism of feature-passing are often left much too vague, with the analysis seeming to trust the features to end up in the proper place. Koopman's suggestion given above has the advantage of providing a principled account of agreement in GB, if indeed every instance of agreement can be correlated with the specifier-head relationship, without otherwise unnecessary movement, or the positing of multiple specifier positions.[27] Chomsky then suggests that structural case assignment is generally correlated with agreement and thus reflects a government relation between the NP receiving structural case and the associated AGR element.

4.2.5. Economy of Representation

The interpretation of "least effort" in a derivation leads to several different conclusions. Assuming that this "least effort" constraint is an integral factor in the language faculty, a sort of inertia, or a conservation of energy device, then this constraint manifests itself in a reluctance to Move-alpha, or to otherwise Affect-alpha. That is, not only is movement considered an effort, so is deletion, the insertion of "dummy" elements, such as *do*, and so on. Affect-alpha is then seen as a last resort measure, used only to save derivations that would otherwise be lost to ungrammaticality. In terms of describing a cline of affect, various other issues come into play; whether the rule involved is part of Universal Grammar or is language

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[27] As Chomsky further points out, this view could be likened to Kayne's proposal that agreement with an NP is always the reflection of a government relation between the head AGR and the NP, either the SPEC-head relation, or the relation of the head to an adjoined element. This analysis suggests the similarity between the SPEC position of a maximal projection, and the positions created by adjunction to a maximal projection.

specific, locality, etc. As this is assumed to be part of the nature of the language faculty, it is not surprising to see it manifest itself at the level of the individual representation as well, thus giving the principle of Full Interpretation.

> The analogous principle for representations would stipulate that, just as there can be no superfluous steps in derivations, so there can be no superfluous symbols in representations. This is the intuitive content of the notion of Full Interpretation (FI), which holds that an element can appear in a representation only if it is properly "licensed." (Chomsky 1988 p. 18-19).

In order for this "least effort" condition not to have a Hand of God interpretation, however, its operation must be clearly described for all levels of representation. Chomsky gives a more specific interpretation of FI with respect to each of the levels at which it operates; it is said to hold vacuously at D-Structure, as it is:

> a projection of lexical structure in terms of the notions of X-bar Theory." (1988 p. 19)

At PF, the condition holds in a strong form.

> That is, a condition on phonetic representation is that each symbol be interpreted in terms of articulatory and perceptual mechanisms in a language-invariant manner; a representation that lacks this property is simply not considered a phonetic representation, but rather a "higher-level" representation, still to be converted to PF."[28] (1988 p. 19).

At LF, it provides:

> that every element must have a language-invariant interpretation in terms of interactions with the conceptual systems" (1988 p. 19).

Chomsky then attempts to spell out in some further detail what this latter could mean. For example, it is taken to block the possibility of vacuous quantification and the existence of true free variables, thus yielding a fundamental difference between natural language and formal systems. The definition of what is a legitimate element at LF is then given as:

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[28]A casual reading suggests that the PFLP might be interpreted as a restatement of the Principle of Full Interpretation. However, the way in which Chomsky cashes out FI for the levels of D-Structure and PF serves to vitiate it as an operational constraint on representations at these levels. Further, the PFLP exploits the relationship between levels, or the mapping between levels, to limit the possibilities for a derivation. This derivation can be viewed non-declaratively as a well-formed set of three-tuples corresponding to the D-Structure, S-Structure and PF representations.

Each relevant element at the LF level is a chain, perhaps a one-membered chain: ($\alpha_1 \ldots . \alpha_n$).

Thus the following elements are required at LF, each a chain (Chomsky 1988 p. 21):

1. Arguments: each element is in an A-position, α_1 case-marked and α_n theta-marked, in accordance with the chain condition.

2. Adjuncts: each element is in an A-bar position.

3. Lexical elements: each element is in an X^0 position.

4. Predicates, possibly predicate chains if there is predicate raising, VP-movement in overt syntax, and other cases.

5. Operator-variable constructions, each a chain (α_1, α_2), where the operator α_1 is in an A-bar position and the variable α_2 is in an A-position.

Thus by FI, everything not covered in this list must be deleted. This means that AGR-trace, and perhaps the trace of [-finite] must be deleted, though V-trace may not be given the analysis earlier. In the case of the chain resulting from the successive cyclic A-bar movement from an argument position, the chain will not be a legitimate object at LF, as it is heterogenous, consisting of an adjunct chain and an (A-bar, A) pair (an operator-variable construction, where the A-bar position is occupied by a trace). Thus the intermediate A-bar traces must be eliminated at LF.[29] The other three cases, adjunct-movement, argument-movement and X^0 movement, all form homogeneous chains, thus their intermediate traces need not, and by "least effort" then cannot be eliminated. Chomsky then notes that the specifier of noun phrases shares some properties of A-positions and other properties of A-bar positions (1988 p. 21).

4.2.6. Full Interpretation and Expletives

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[29]This then constitutes a rationale for the Lasnik & Saito (1984) principle of deleting "offending traces" in order to satisfy the ECP.

The account given above then raises the issue of the status of expletives at LF. In the case of *there*, Chomsky notes that it is not truly expletive, in that it has certain features associated with it, thus making it undeletable:

> by the condition on recoverability of deletion -- yet to be precisely formulated" (Chomsky 1988 p. 22).

He proposes treating *there* as an LF affix, needing something to adjoin to it in order for it to be properly licensed at LF. The properties associated with *there* are:

(1) An NP must appear in a particular formal relationship to *there*, hence we will call this NP the "associate".

(2) The number agreement on the verb is with the associate.

(3) An alternate form exists with the associate in the subject position, and *there* suppressed.

At LF *there* is an affix, with the associate adjoining to it. Number agreement is non-existent on *there* and thus percolates up from the associate (and then must be checked at LF, not at S-Structure). This analysis then predicts that *there* can only be an NP expletive, and that there must be another expletive element in English to associate with clauses. This clausal expletive is *it*. This analysis predicts that the syntactic relationship between *there* and its associate must be a close one, perhaps clause-bounded. This analysis however raises some questions. The first is, how to block a pronoun as the associate, as the following are ungrammatical:

(39) *There is she in the room.

(40) *There is her in the room.

(41) *There is they in the room.

The next questions have to do with theta-assignment and case. It would appear that it is not the case that both *there* and its associate must receive distinct theta-roles or cases. At S-Structure, *there* is in a case-marked position, and arguably the associate is as well, though the ungrammaticality of pronominal associates makes it difficult to test. The equative construction, with *be*, can be viewed as a sort of universal donor of case and theta, and perhaps therein lies the explanation. Clearly, though, it would not be warranted to allow the

expletive and the associate to both have distinct theta-roles. However, in order to avoid a violation of Principle C of the Binding Theory it is necessary to assume that distinct indexes have been assigned to the expletive and its associate. Given this assumption, it may be unwarranted to assume that they can then form a chain sharing case and theta marking properties.

4.2.7. Case-transmission

Although case-transmission cannot be invoked in the case of expletive *there* considered above, there is evidence that it does exist as a productive syntactic process. Koopman (1987) postulates a parametric difference between languages that have Case Chains ([+CC]) such as English and French, and those that do not ([-CC]) such as Bambara. The [+CC] languages allow a verb trace to assign case, thus allowing the formation of a causative, they allow operator movement, in which the operator inherits case in order to satisfy the Case Filter, and they allow the expletive-associative relationship (for Koopman). In Bambara, a [-CC] language, only intransitive verbs can raise, and then only if the subject is suppressed (thus leaving nothing requiring case from the verb trace); WH items remain in situ and there are no expletives.

As Chomsky has questioned the usefulness of case transmission in the derivation of expletive-associate relations, and as some contemporary work considers parametric variation to arise out of the properties of various lexical items, rather than higher-level parameters over the language grammars themselves, Chomsky considers whether he can reformulate Koopman's analysis by interpreting the data to result from not a parameter concerning the existence of the abstract element Case Chain, but from parametric variation arising from the lexical properties of the elements involved. Along this line of argumentation, he proposes the following analysis which accounts for Koopman's data without involving the mechanism of the Case Chain. Assume that the difference arises from the lexical property of either being able or not being able to enter into a Case Relation, where this latter refers to the ability to either receive or to assign case. In a [+C] (formerly [+CC]) language, all X^0 elements are [+C]. In a [-C] language, only lexical X^0 are [+C]. Verb-trace is non-lexical and thus can neither receive nor assign case (it is thus [-C]), the trace of WH-movement is also non-lexical and thus cannot receive case, and expletives are also non-lexical and thus [-C]. This is thus a very neat condensation of Koopman's somewhat arcane parameter into a parameter which is more neatly tied to the notion of the centrality of lexical items in language acquisition and parameter setting. The only difficulty might be seen to lie in adjudging an expletive element to be non-lexical. As Bambara has no expletives, the directionality of this prohibition can be a bit blurry. It could be said

that as Bambara has no expletives, the construction can never arise. On the other hand, it could be said that the possibility of having expletives as non-lexical items universally (presumably) cannot arise as they could not receive case if they did exist.[30]

In conclusion, Chomsky considers the basically surprising nature of the results he has obtained with respect to the organization of the language faculty. The instantiation of the "least effort" principle has the somewhat contradictory effect of inducing :

> the kinds of properties that yield computational difficulties, since structural descriptions have to meet "global" conditions. From the point of view of parsing, suppose that we have a process recovering an S-Structure s from the PF representation p. Then to determine the status of s, we have to carry out a number of operations. We have to determine whether s is derived from a properly formed D-Structure d licensed by the lexicon, and whether the derivation from d through s to the LF representation l is minimal in the required sense, less costly than any other derivation from d. Furthermore, we have to determine whether l satisfies the conditions of external licensing, FI, and other properties of LF. In general, these computations may be nontrivial. In these respects, language design appears to be problematic from a parsing-theoretic perspective, though elegant regarded in isolation from considerations of use. [. . .] But language design as such appears to be in many respects "dysfunctional," yielding properties that are not well adapted to the functions language is called upon to perform. There is no real paradox here; there is no reason to suppose, a priori, that the general design of language is conducive to efficient use. Rather, what we seem to discover are some intriguing and unexpected features of language design, not unlike those that have been discovered throughout the inquiry into the nature of language, though unusual among biological systems of the natural world. (1988 p. 27-28)

I hope to show in this thesis that there is an reinterpretation of the principle of Full Interpretation (called the PFLP) which together with a number of restrictions on the power of the grammar serve to bring the language faculty more in line with what we know about computation and the structure of the brain.

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[30]Further, the Case Filter must be interpreted as also ruling out non-lexical items without case, otherwise both the account of the lack of expletives, and of the ungrammaticality of non-case-marked WH-trace can't be accounted for. Presumably, in the case of WH-movement, case transmission is still held to exist, at least in the definition of a well-formed, case-marked chain consisting of the WH-trace and the WH-element. It is an interesting analysis, but ends up with providing an unusual reason for the absence of WH-movement, and for the absence of expletives, which has itself often been associated with the PRO-drop parameter. There is also evidence that locative inversion in Bantu languages functions fundamentally differently from locative inversion in languages such as French and English, due to the argument structures at DS rather than to properties of case.

Chapter 5. Towards a Restricted Theory of Grammar

The theory of grammar which I am pursuing in this thesis can be seen as a hybrid between the Principles and Parameters Theory (GB) and the more computationally tractable Generalized Phrase Structure Grammar (GPSG). Both theories, though radically opposed in methodology, have their strengths and weaknesses. GB provides a better vocabulary for examining cross-linguistic variation and similarity but is not formally rigorous. Besides the obvious computational and formal language theoretic problems, in general analyses in GB involve definitions, principles and rules which are never given a coherent logical definition. There appears to be no limit to the form an analysis can take, a clear formal problem. GPSG, on the other hand, is cumbersome and particularly inimical to cross-language comparisons. Further, it lacks any general notion of a common factor in various languages, resembling, on this score, early Transformational Grammar, which required the grammar of each language to have a language specific list of transformations. GPSG provided each language with a language specific list of IDLP statements and metarules. The overall effect of the constriction of GB proposed herein should serve to severely limit the analyses available to the GB linguist. Just as the child must (somewhat) deterministically arrive at an adult grammar given the data and the principles of Universal Grammar, so should linguists converge on an analysis which is limited by the principles of grammar. Since we will assume that the child cannot arbitrarily decide to redefine 'government', or to invent a new use for theta-marking, so should these options not be available to the linguist. To some extent, uncertainty about the proper definition or extent of proposed principles of grammar is not a weakness of a theory, but is rather a symptom of the early stage of investigation which still seems to be the case for research into grammar. The particular limitation on grammar pursued herein concerns itself with syntactic representations, seeking to circumscribe those available to the linguist (and to the child) according to the data available and to the principles of tree unification and X-bar projection. If we can show that the possible tree structures are extractable from the data according to an algorithm, then we have eliminated a great source of potential confusion for the learner, and thus also a great source of difficulty in parsing (both human and machine) and analysis. If tree structures can differ from language to language in unpredictable ways then learnability problems proliferate. The great insight of the "Barriers Tree" (Chomsky 1986a) and the projection of functional categories has been to regularize tree structures across utterances (across languages). Although this tree can be considerably "deeper", containing "empty" structure, it is also considerably more general, providing a template for the representation of all sentences. Pre-Barriers GB shared with

GPSG the complication of an unconstrained set of possible tree structures for the sentences of a language. If all sentences are derived, by movement, from a single tree template, then the grammar, and the possible analyses of the grammar, are considerably constrained.[1] If the possibility were open to the child, which appears to be available to the linguist, to add branches and projections as needed to develop a particular analysis, then it is surprising that any syntactically based ungrammaticality effects exist. This thesis, then, pursues the intuition that learning a language involves learning the morphemes of the language, along with their syntactic, semantic and phonological properties. It does not involve learning tree structures.

The influence of GPSG on GB has been considerable over the past few years. A couple of the innovations that can be seen to have their roots in principles and analyses of GPSG are:

(i) The factoring out of linear precedence from dominance relations in trees. That is, the idea common in current GB that sisters are unordered with respect to each other. Ordering effects only arise through directionality of processes such as case marking and theta assignment.

(ii) Feature passing mechanisms, and the use of features to license empty categories (e.g. the gamma-marking analysis of Lasnik and Saito used in Barriers).

5.1. *A Constraint on Learnability and Representations: the PFLP*

The PF-Licensing Principle, introduced in Chapter One, acts as a well-formedness constraint on syntactic representations at S-Structure. It has the effect of "pruning" trees, and of forcing movement by filtering structures ill-formed through lack of movement licensing a local tree projection. Let us consider again the definition of the PFLP:

> PF-Licensing Principle: A local tree domain α must be PF-licensed, where α is PF-licensed iff:
>
> a. the head of α contains phonetically realised material, or

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[1]However, there is evidence to posit a second tree schema for equative constructions. This possibility is discussed in Chapter Eight.

b. the head or the specifier position of α is bound by a PF-licensed position, or

c. the specifier position of α is phonetically realized.

This principle, then, requires every local tree domain to either contain phonetic material in its head or specifier position, or to contain an empty category head or specifier which is bound by phonetic material higher in the tree.

5.2. A Case in Point: Passive

By way of illustration, let's consider the effects of rejecting certain foundations of the post-Barriers account of NP Movement, and Passive in particular.

If reject the analysis of Lasnik and Saito (1984), and in particular the ability to erase intermediate traces of movement at LF in order to avoid ECP violations then we must come up with a different analysis of extraction from within a barrier than that given in Chomsky. If we wish to develop a grammar which can be given a declarative characterization then this is a necessary step to take.

Consider the following sentences:

(1) Who did they wonder whether to consider [t to be intelligent]?

(2) *John seems that it is considered [t to be intelligent].

In Barriers, Chomsky considers how to derive this difference in grammaticality. In (1) *who* adjoins to VP in order to escape the VP barrier, producing the structure

$[_{VP}$ t' $[_{VP}$ consider [t . . .]]]

here the trace t is properly governed through antecedent government by t'. *who* can then move from this position directly to the matrix [SPEC, CP] position, and erase t' at LF once it has licensed t, in order to escape t' showing an ECP violation (Lasnik & Saito 1984). A notion of 'improper movement' blocks this process in (2). That is, t would be an A-bar bound R-expression that is A-bound in the domain of the head of its chain, thus violating Condition C of the

Binding Theory (Chomsky 1986a, footnote 20). In other words, t would be A-bar bound in the VP adjunction position, but A-bound in subject position.

In the analysis developed herein, we derive the difference in grammaticality from the principle which requires a passive to have a D-Structure subject if possible, not an expletive one. In (2), *John* raises to [SPEC, VP], thus it is in a position to raise to subject position of a passive verb[2]. Why it moves is not as clear. As we consider verbs to be profligate case assigners we cannot then use the analysis of passive under which the passive affix absorbs the Accusative case, thus forcing movement of NP in order for it to be case-marked. The intuition we rely on concerns the avoidance of expletive subjects of passives in English. If we could derive this property in some way, we would also then have an explanation for why intransitives don't passivize in English (though they do in other languages, such as German). Expletive subjects of passives do arise in those constructions which used to be called 'It-extrapositions'.

(3) It is considered important for John to go.

(4) For John to go is considered important.

(5) considers for John to go important.

(6) It is expected that Nick will win the match.

(7) That Nick will win the match is expected.

(8) expects that Nick will win the match.

(9) Nick is expected to win the match.

Sentences (3-5) illustrate the behavior of a sentential subject of a small clause. Nothing can escape the small clause in this situation. *John* cannot surface as matrix subject in *John is considered to go important* as it would have to move over a DP, IP and CP barrier in order to get

---

[2]Note that we are treating case assignment to subjects of small clauses in the same way as case-assignment in ECM constructions. It further follows that V moves to INFL even in the case of non-finite INFL.

to [SPEC, VP], from which it could then raise to [SPEC, IP].[3] The entire sentential subject *for John to go* can raise to [SPEC, VP] and thence to [SPEC, IP], giving (4). Or, alternatively, a process similar to Heavy-NP shift can operate, giving the extraposed (3) with an expletive subject. We could posit that the expletive subjects of passives are only licensed at PF through this heavy NP movement.

Sentences (6-9) illustrate the related behavior of verbs like *expect* which take a sentential complement. If the complement is non-finite, as in (9), then the lower subject can raise to [SPEC, VP] and from there to [SPEC, IP]. If however the sentential complement is finite, then again the lower subject cannot escape. The entire complement can raise to subject position from it s [CP,V'] position as object, and like the case considered above, can be extraposed leaving an expletive subject. If we could then arrive at an acceptable analysis of Heavy-NP shift all would be well, and we could derive the lack of expletive subjects in passives in English from the bi-unique assignment condition on Nominative case. Although we must in some way distinguish passives from 'weather' verbs which do allow expletive subjects. It could be a property of passive INFL. This then suggests expanding the account of verb-raising of Cann and Tait (in prep) to include passive in the system, and then deriving this property of Passive from its structural configuration.

5.2.1. The Structural Properties of Passive

Consider the following structure for a passive sentence. It involves expanding the analysis of Cann and Tait (1990) to include the passive elements *be-en* in the general auxiliary system.

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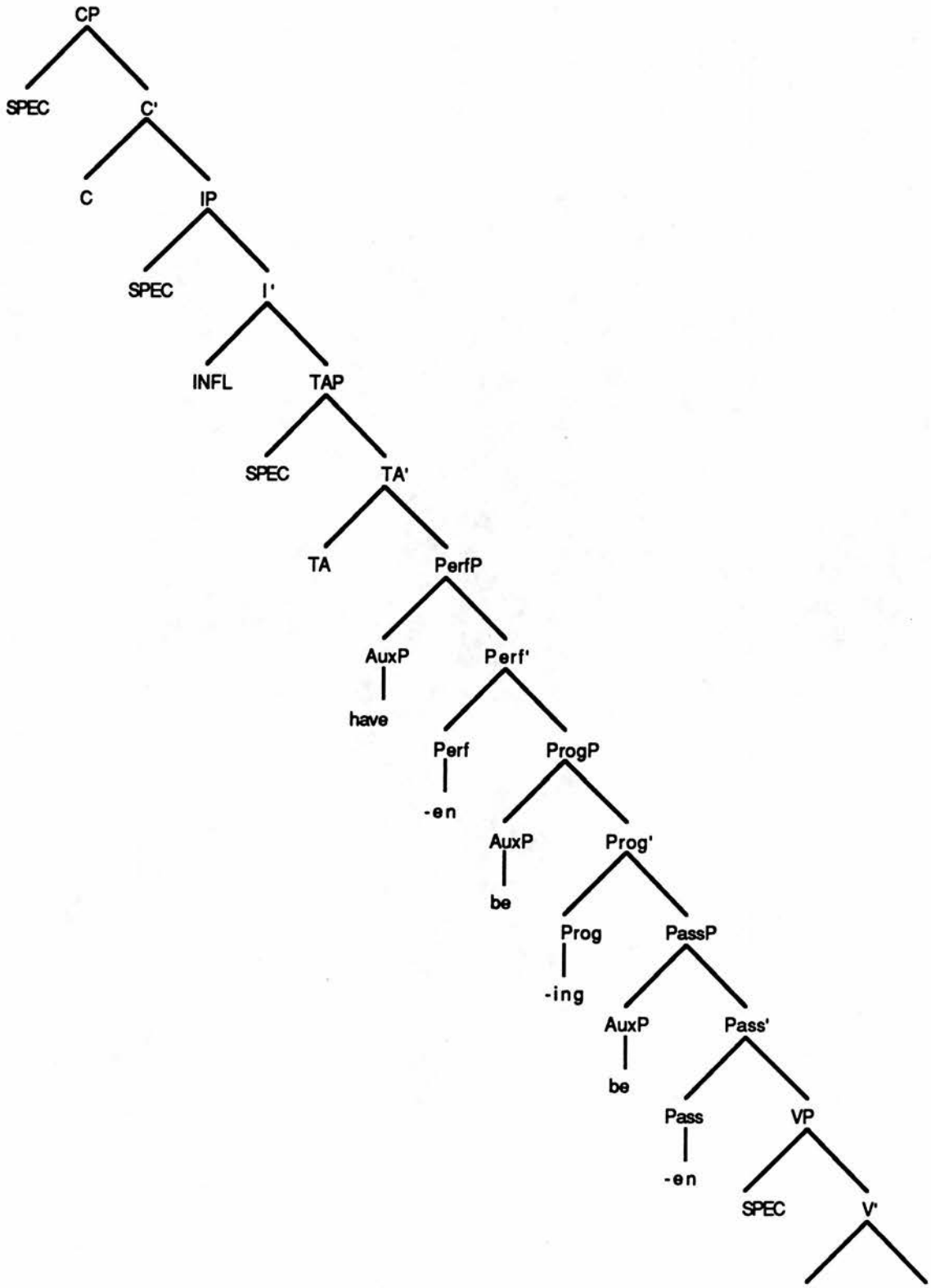
[3]In terms of the redefinition of barrier given in Chapter Eight, it is the presence of the DP which blocks movement.


CP
SPEC
C'
C
IP
SPEC
I'
INFL
TAP
SPEC
TA'
TA
PerfP
AuxP
Perf'
have
Perf
ProgP
-en
AuxP
Prog'
be
Prog
PassP
-ing
AuxP
Pass'
be
Pass
VP
-en
SPEC
V'

The figure above illustrates a fully articulated auxiliary structure which would appear in a sentence like:

(10) John had been being considered for a good job.

How does a passive sentence differ from a non-passive? In terms of structure, the only difference is that the VP is dominated by a PassiveP. For this entire structure, we must assume that the complement phrase is selected by it s head sister. From this it follows that each phrase in this V-CP projection[4] is theta-governed by the relevant head sister. If they are also L-marked, then they are not barriers to movement. Clearly, this is a result we want, otherwise there will be too many barriers in the tree if the extended IP analysis of Pollock is adopted. It then follows that the TAP is not L-marked, as it would have to be L-marked by INFL, which is not a lexical category. TAP then is an inherent barrier, and VP is not.

One solution would be to introduce a restricted notion of double-theta-marking. Assume that for some languages it is possible to theta-mark an NP both with a theta-role assigned from the theta-grid of a verb, and with a TOPIC theta-role assigned by INFL (or something similar to INFL). Some languages, for instance Tagalog, might make general use of this double-theta-marking. Others might optionally make use of it, for example Japanese, and still others, like English, might make use of it in limited constructions, such as passive[5].

Now, if passive constructions in English introduce a TOPIC theta-role, it follows that there must be an argument for it to be assigned to. Therefore, passive can only involve verbs with objects, and cannot involve intransitive verbs. Assume that it is the head of PassP that assigns this theta-role, and that it must assign it under government. The head of PassP (*-en*) governs

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[4]By V-CP projection we refer to the expanded IP structure. Clearly, this structure is to some extent a single expansion with discontinuous nodes, and in that respect is a sort of 'adjunction structure' as Chomsky (1988) suggests. In this part of the tree, all argumental and aspectual properties of a sentence are represented.

[5]It might be argued that this is not best treated as double-theta-marking, but as double-case marking. In Japanese and in Tagalog topics receive a morphological affix that appears to be related to case affixes. On the other hand, topicalization is often sensitive to issues of animacy, and has been shown to interact with hierarchies of theta-roles, suggesting that it does form part of Theta Theory.

VP, and through VP governs [SPEC, VP]. Any NP in [SPEC, VP] then will be assigned the TOPIC theta-role. As this theta-role is unique in not causing Theta-Criterion violations it does not prevent NPs from moving to [SPEC, VP] in the sense of making that position an argument position. This would predict that move-NP in passive applies more freely to NPs in [SPEC, VP] than to those dominated by V' (i.e. direct object position), a prediction that is born out by the data.[6] However, consider the following:

(11) A ticket was given to John for speeding.

(12) *A ticket was given John for speeding.

In the first sentence we see that if the sister of V is to be raised to subject position, the indirect argument must be 'demoted' to a PP. This suggests that the TOPIC theta-role is assigned through string adjacency rightwards by the passive morpheme *-en*. Or that the direct object can also raise to [SPEC, VP] in order to pick up the TOPIC theta-role.

Alternatively, we could assume that the TOPIC theta-role is assigned to subject position, and that there is a feature clash between an expletive subject and a TOPIC theta-role. Again, the assignment of this sort of shadow (sentential) theta-role (which can be co-assigned with another theta-role) doesn't serve to block movement to the position of its assignment. This analysis will solve the problem noted above, if we assume that it is easier for an NP in [SPEC, VP] to raise than for a sister of V to raise over a filled SPEC position. This assumption is motivated by the observation that in the case of ditransitive verbs, dative objects passivize more readily than do patientive objects.[7] Thus we have derived this difference from the theta-role assigning capacity of the passive morpheme, and not from any case absorption analysis. Whichever analysis of theta-role assignment is adopted, it prevents passive from applying to intransitive verbs in English, and also accounts for the discourse effect of passive as a form of topicalization. From this last point, we might then assume that the latter analysis is correct, and that the theta-role TOPIC should be assigned to subject position, percolated up from the

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[6]See Chapter Six for further discussion

[7]This is further predicted from the fact that dative objects outrank patientive objects on an agentivity hierarchy, and thus topicalize more readily. I return to the issue of the agentivity hierarchy in the next section.

Passive head. (through indirect theta-role assignment, as is all theta-role assignment to subject position[8]). This, combined with the case assigning properties of INFL, force an NP to appear in subject position, and the TOPIC theta-role requires this NP to be non-expletive[9]. Pollock (1990 fn. 49, p. 420) considers another case of double-theta-marking. He proposes that emphatic *do* should be analyzed as ordinary *do* which has the property of being able to reassign a copy of the main verb's theta-grid, with double assignment of the same theta-grid interpreted as "emphatic". This analysis is consistent with what I have proposed, as (i) the theta-roles assigned by *do* must "match" those assigned by the main verb (the matching effect), and (ii) double theta-marking is interpreted as "emphatic", thus having a similar effect to double-assignment to subject position giving a "topic" interpretation.

5.2.2. Multiple Topic Languages

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[8]Evidence from non-matching effects of theta-role assignment in free relatives suggests that basic differences exist between direct and indirect theta-marking. In particular, it would seem that positions of indirect theta-assignment allow multiple theta-role assignment. No matching effects were found with free relatives where either the free relative was the subject of the sentence, or where the relativized position was the subject. This property of indirect theta-role assignment to the subject in languages with subject-object asymmetries (assuming that languages with a "flat" structure assign theta-roles directly to both subject and object, unmediated by a VP) could explain why subject position correlates with topic position so strongly (Li and Thompson 1976).

[9]However, this leaves us with no account of 'true' topicalized sentences like

(i) Beans, I like.

(ii) This brand of beans, I never knew anyone who didn't like t.

Topicalization seems to be a major problem. If we continue to claim that INFL is a bi-unique case assigner then it cannot be assigning case to the topic position. It has generally been assumed that NP traces cannot transmit case (unlike WH-traces), so the topicalized constituent cannot be getting accusative case from the verb *like*. Further, if we adopted a case-transmission analysis, we would have no account of resumptive pronouns:

(iii) This brand of beans, I never met anyone who couldn't eat two whole cans of them in one sitting.

It does appear to be accusative (or rather oblique) case that the topicalized constituent is receiving, I discuss this issue in more detail in a later section.

Li and Thompson (1976) propose a typology based on the relative importance of topics or subjects to a language. They identify a cline, at one end being Topic Prominent (Tp) Languages (Chinese, Lolo-Burmese), and at the other being Subject Prominent (Sp) Languages (Indo-European, Niger-Congo, Indonesian, Semitic, Dyirbal). Some languages are identified as both (Japanese, Korean), having two constructions, and finally some languages are identified as neither (Tagalog, Ilocano). In these languages, subject and topic are thought to have merged. Li and Thompson propose the following criteria to distinguish subject from topic. I will go through these criteria considering them as possible evidence that topicalization should be accounted for under some version of Theta-Theory.[10]

1) Definiteness (including proper nouns and generics): Topics are always definite. Subjects are not so restricted.

2) Selectional Restrictions: Topics need not be governed by any verb (i.e., assigned a theta-role). Subjects always receive a theta-role, unless they are expletive.

3) The verb determines the subject but not the topic through its theta-grid.

4) Functional Role: The functional role of Topic is constant across sentences. The subject's functional role is not constant, as it may be expletive.

5) Verb agreement (if there is any) usually occurs with the subject, hardly ever with a topic.

6) Sentence Initial Position: The topic is always sentence initial, the subject need not be.[11]

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[10]Case Theory will also play a role in this analysis, as I will end in suggesting that topic position, in English and in some other languages, is a position of free oblique case assignment. I will consider later what may be acting as a case-assigner. In English, it could be an intonational particle.

[11]A potential counter-example arises in the case of Basque, where Oyharcabal (1989) identifies a "focus" position just before the verb. This focus position serves as a landing site for WH-

7) Grammatical Processes: the subject controls reflexivization, feeds passive, equi, verb serialization, and imperativization. The topic doesn't interact with any other syntactic processes. It is syntactically independent.[12]

They further identify the following characteristics of Topic Prominent Languages: (a) surface coding for topic, (b) very infrequent appearance of passive, (c) no expletive subjects, (d) existence of "double-subject" constructions,[13] (e) topic controls co-reference in the sense that it controls empty NP's in the clause, (f) most commonly found in verb-final languages, (g) few constraints on the topic constituent, subject prominent languages largely constrain what can be topicalized, and (h) the basic sentence is of the Topic-Comment form.

These criteria are suggestive for our analysis.

In true topicalization, in English as in Subject Prominent languages in general, the topic acts as a super subject, taking the whole sentence as a predicate. Consider the following tree:

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movement. However, Basque does show a sentence-initial location for a topicalization rule (Rebuschi 1989).

[12]Chung (1976) thus identifies topicalization as a clause-bounded root transformation.

[13]For example, the following sentences from Korean (i) and Mandarin Chinese (ii):

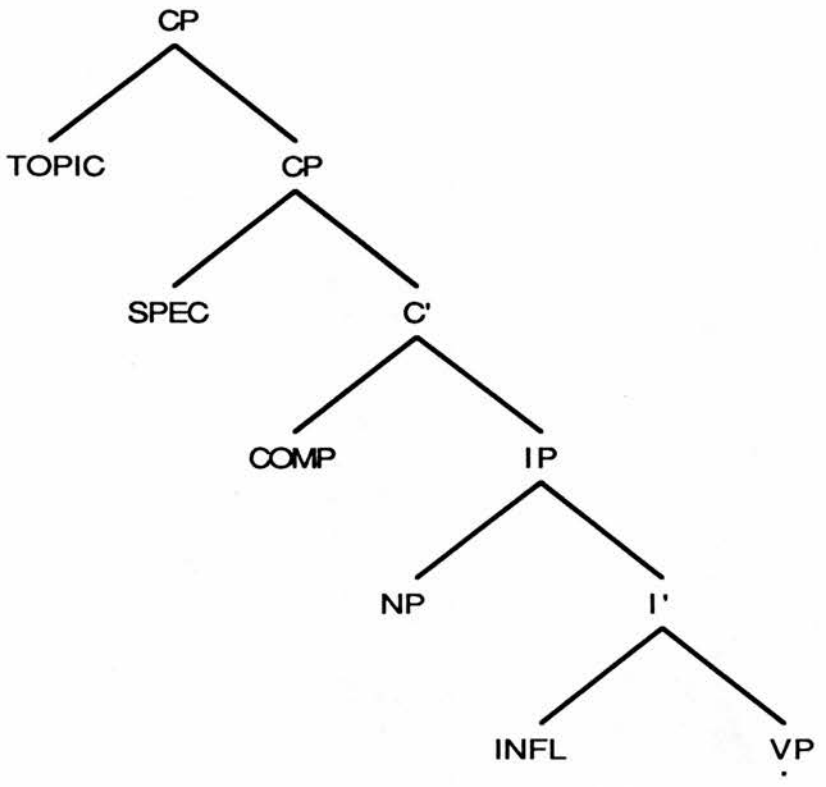
(i) TV-ɨn Zenith-ka tɨntɨn-ha-ta

"The TV (topic), Zenith is durable.

(ii) Xiang bizi chang

elephant nose long

"Elephants have long noses."



Let us assume for the moment that the Topic in a Subject Prominent Language such as English arises adjoined to CP. Effectively, this puts the Topic outside of the sentence (CP) as it is not dominated by (every instance of) CP. If this is the case we can then explain some of the facts mentioned above.

The topic is thematically related to the predicate in a looser way than the subject is, but is still thematically related (otherwise no interpretation is allowable). That is, it is thematically related to the sentence as predicate, rather than to the verb as predicate. Thus it is not assigned a theta-role by the verb, yet does bear a theta-role with respect to the proposition represented in the CP. Let us call this kind of theta-role a Sentential Theta-Role. There is other evidence for the existence of theta-roles which are not central to the verb. There are various constructions in which marginal theta-roles enter into core syntax: applicatives, true

adjunctive arguments usually appearing in prepositional phrases[14] (as opposed to predicative adjuncts such as adverbs of time, place, manner, etc.), and locative inversion.

If topics do appear adjoined to CP then you should be able to have a topic followed by a WH-question, such as: *That man, where have I seen him before?* They receive the topic theta-role from the position (thus there are two ways to assign topic theta-role in English, structurally and by inheritance from the passive morpheme). They receive case through intonation. Or, another way to look at it is that the Case Filter only applies to NP's within the intonational contour of the sentence.[15] This case is oblique/accusative:

(11) Him! Don't mention him again.

(12) *He! Don't mention him again.

(13) A: Who is misbehaving here, teacher?

B: Him and him and her. *He and he and she.

Thus topics are case-marked and theta-marked by virtue of their position and appear either with resumptive pronouns or without.

Now let us consider where Topics arise in Topic Prominent Languages. Consider the following three possibilities: (1) They arise in [SPEC, CP]. (2) They arise outside of CP in the SPEC position of a Topic Phrase which dominates CP. (3) They have the same structure as in Subject Prominent languages and the typological differences arise from other factors in the grammars of the respective languages. If one of the first two possibilities is true, then we have a structural difference between Tp and Sp languages, which explains the typological differences. If the third is true, we must look for other factors to explain the differences. Let us consider the three possibilities in turn.

Topics in [SPEC, CP]

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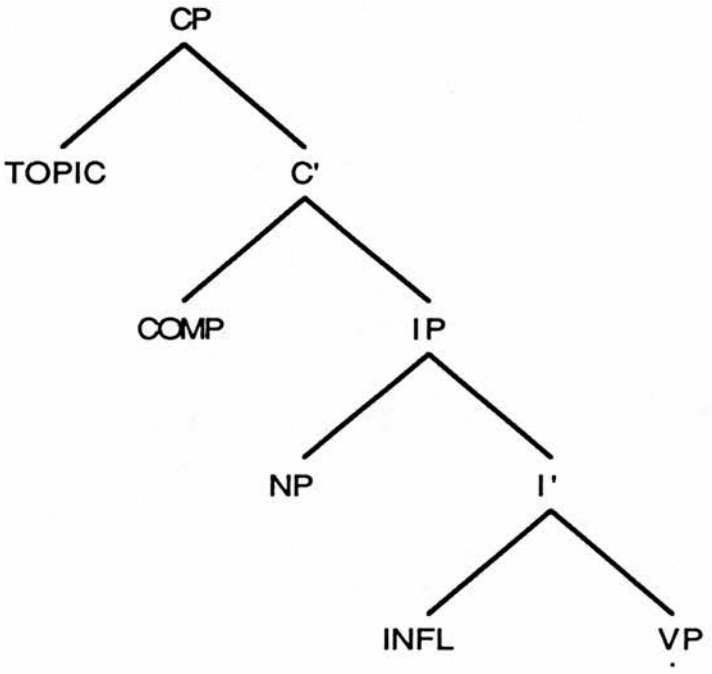
[14]Earlier stages of English allowed adjunctive arguments to serve as subjects *With a knife cut John the bread.* This still occurs in cases of locative inversion *Up the street skipped Sally.*

[15]Alternatively, we could surmise that the Case Filter doesn't apply to lists, as they appear with list intonation.

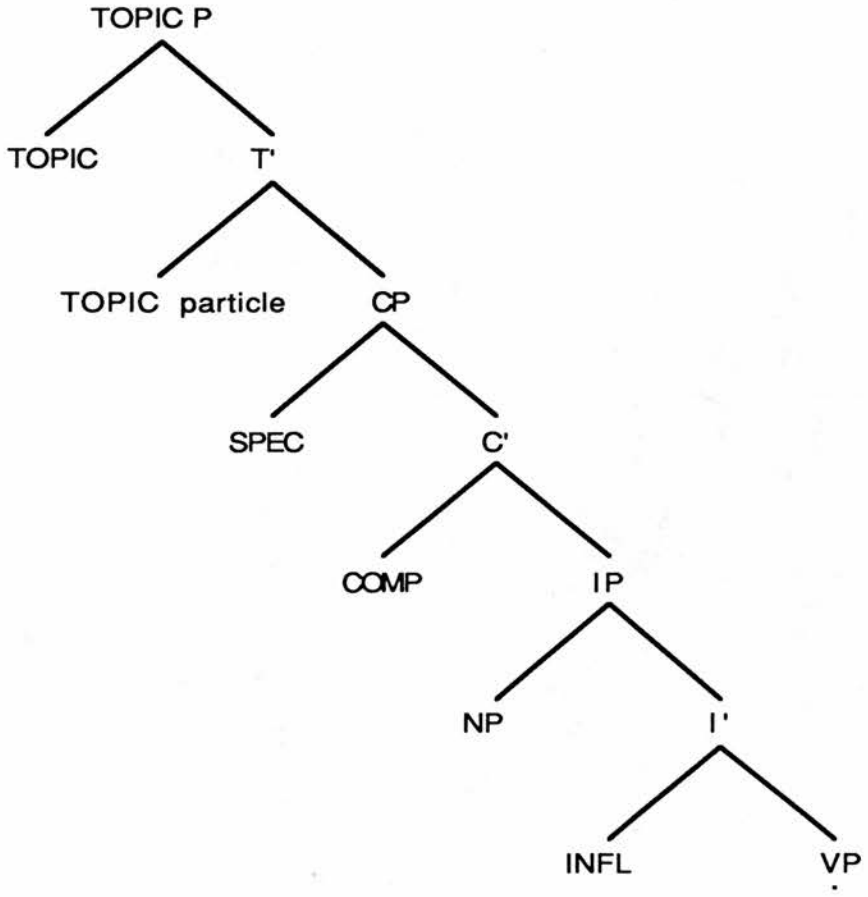
The first possibility allows topics to appear in [SPEC, CP]. If this is the case, then in Tp languages there should be no syntactic WH-movement, i.e., they are WH-in situ languages. Topics are not heads in the sense of Rizzi (1990), that is, they do not participate in the extended predicate projection V to CP, and they cannot then select for a particular type of CP. There should only to be one true Topic as there is only one specifier position.



The Topic Phrase

The second possibility derives the typology from the existence of a super-CP projection in Topic Prominent languages, the Topic Phrase. In this analysis, there is a TOPIC head, probably a particle or some other form of morphological marker for topics, which can select for a particular sort of CP. This structure could yield multiple topics without undue difficulty, allowing them to appear adjoined to T(opic)P, although this should be a possibility only in languages which have an abstract TOPIC head, such as Korean and Chinese which have no

overt topic markers. Further, if this is the correct structure then Tp languages need not be WH-in situ and there could be selection factors operating on the CP selected by the Topic head[16].



The Universal Topic Position

The last position advocates a universal Topic position, probably adjoined to CP, for both Topic Prominent and Subject Prominent languages. If this is the case, then the typological differences noted by Li and Thompson must fall out of some other principle of grammar on which the two sets of languages differ.

It could be that the difference arises out of the case-assigning properties of INFL in Subject Prominent languages; the subject being necessary for NOM case assignment in English (satisfying

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[16]Although as the TOPIC head could only select non-WH CP's, the data will be difficult to discover which could decide between the first two possibilities strictly on this point.

INFL) and thus the subject provides a closer possible governor for purposes of control. In terms of feeding other transformations once you're outside of CP in English you're dead in the water. For these other languages, maybe CP isn't such a barrier.

5.2.2.1. Conclusion

In an earlier section I reproduced Li and Thompson's diagnostics for Topic Prominent, as opposed to Subject Prominent languages. Let us reconsider them in the light of the three structures proposed above. The analysis which claims, equally across all three structures, that Topics are assigned sentential Theta-roles, and thus that Theta Theory plays a major role in the analysis of topicalization cross-linguistically, is supported by the following: (1) topics are definite, definiteness being within the domain of the definition of theta-roles; (2) topics are not thematically related to the verb, in the sense of being assigned a theta-role by the verb, but have a constant functional role across sentences of various languages. They are thematically related to the sentence (or proposition) as a whole; and (3) topics are universally sentence-initial. This invariance of position suggests a structural analysis of TOPIC theta-role assignment.

Now let us consider how the diagnostics listed above relate to the three structures put forward. The third position, which claims a universal topic position, may be preferred as more restricted, in that the basic tree structure, for non-lexical categories, is constant across languages. The first two are to some extent to be preferred in terms of simplicity of representation, as the difference between the two types of languages is immediately apparent structurally, and the related differences can be seen to derive from the structural difference itself, rather than from a cluster of other properties. The notion of a parameter as an either/or setting, with various seemingly unrelated consequences following, has great appeal to some researchers, though it may have more serious problems in terms of learnability. The relevant subject vs. topic diagnostics are; (1) the verb is much more likely to agree with a subject than with a topic; (2) the topic appears universally in sentence-initial position; and (3) although the subject is affected by various types of movement (passive, subject-raising, verb serialization, imperatives) the topic is not so affected, and is said to be "syntactically independent." If we take the upper-most projection within the scope of the verb to be IP (whose head in some sense selects VP) then all three structures place the topic outside the domain of the verb, and thus outside the part of the sentence in which verb-agreement might occur. Further, if all agreement is a result of SPEC-head coindexing, then we can assume that in no

language do topics arise in any specifier relation to a verb. The question of agreement is a difficult one, as various analyses exist.[17] Without a close examination of those languages which do show Topic agreement on the verb we can only safely assume that topics arise outside the domain of the verb, in some general sense of domain. The second diagnostic, the universal sentence-initial position of the topic, also fails to distinguish between the three structures, as all place the topic in initial position. The third offers little more hope. The syntactic inertness of the topic with respect to other operations could be ascribed to any of the three positions, though the first position in which Topics appear in [SPEC, CP] is disadvantaged here, as in general this position is syntactically active. The further characteristic of Topics being that they are sentence-initial, and not merely clause initial, can be seen to be a stronger argument against this position, as presumably topics should be able to arise in lower clauses in the specifier position, and from there could be "syntactically active". The evidence, however, suggests that though topics do appear in embedded clauses, they are still syntactically inert. Thus perhaps we can discard this alternative.

Now let us consider the characteristics of Topic Prominent languages in the light of the remaining two analyses. These are: the Universal Topic position adjoined to CP, and the existence of a Topic Phrase dominating CP in Tp languages. Recall that for the purposes of learnability, the Universal Topic Position analysis has the advantage, unless all the typological differences can be seen to follow from the structure alone.[18] Let us augment our Universal Topic position analysis by considering briefly the other differences which we know for independent reasons to hold, and consider them as the origin of the typology. These are the bi-unique case assignment of INFL in English[19], thus requiring a subject in all clauses, and the Direction of Headedness parameter, in particular its properties relating to verb-final languages. Some have argued that this parameter is merely an artifact of other converging properties such as direction of case-assignment, government, etc. For our purposes, let us consider

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[17]There are most likely two different sources for what surfaces as agreement phenomena; those resulting from the incorporation of a pronominal argument, and those resulting from some form of feature-passing or coindexation.

[18]Although, the PFLP would predict the acquisition of a Topic Phrase in those languages where some over topic-specific morphology or particle exists.

[19]Italian INFL does not have this property, but is a Subject Prominent language, thus this in itself cannot account for the typological differences shown.

it in this light, and as we know independently of topic position that the majority of Topic Prominent languages are verb-final, we can assume that the verbs both govern and assign case leftwards.

The diagnostics come down strongly in favor of the Universal Topic Position (hence UTP). The presence of surface-coding of topics (1) favors neither position. The Case Filter requires all NPs to have case, and we can thus assume that in these languages that case is made overt by the presence of a topic morpheme. In the TP analysis this morpheme would be a head which could force movement from lower in the clause to satisfy the Stray Affix Filter, thus giving Gap Topic constructions. However, most Tp languages have non-gap topics freely, thus also requiring the possibility of base generation of the topic in [SPEC, TP] position. In the UTP analysis this morpheme could head a KP.[20] The second, third and fourth diagnostics, low frequency of passive, lack of expletive subjects, and double-subject constructions respectively, all support the UTP. The lack of passive follows from the verb-final word order, and the existence of free topic position. The lack of expletive subjects and the existence of double-subject constructions both point to the case-assignment parameter. If INFL in these languages is a profligate case-assigner, then both the lack of a NOM argument (no expletive subjects) and the existence of two NOM arguments (double-subject construction) follow directly. The ability of the Topic to control co-reference (5) supports neither position, as in both cases the Topic is in a position to c-command any position in the sentence. The sixth diagnostic, the propensity of Topic Prominent languages to be verb-final, we have included as part of our UTP analysis.[21] The seventh diagnostic, the fact that Subject Prominent languages may constrain what can be topicalized, fails to distinguish the two, though it may seem to favor the TP analysis, as it posits a basic difference between the two types of languages. One example Li and Thompson give of such a constraint occurs in Indonesian, where only the surface subject constituent and the genitive of the surface subject constituent can be topicalized. Consider the following data from Li and Thompson (30-33, pp 470-471):

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[20]Thus allowing the Topic to partake of the normal sentence intonation contour in languages with a phonetically lexically overt case-morpheme. English topics have a phonetically intonationally overt case-morpheme.

[21]Verb-final languages in general display weaker subject properties. What in particular this is due to remains an open question at this point, though the frequency of null anaphora in these V-final languages may suggest that the subject doesn't occupy a privileged [SPEC, IP] position.

(11) Ibu anak itu membeli sepatu

mother child that buy shoe

"That child's mother bought shoes."

"That child's mother" is the subject.

(12) Ibu anak itu, dia membeli sepatu

mother child that, she buy shoe

"That child's mother, she bought shoes."

Here the entire subject is topicalized.

(13) Anak itu, ibu-nja membeli sepatu

child that, mother-POSS buy shoe

"That child, his mother bought shoes."

Where the possessor of the subject has been topicalized.

(14) *Sepatu itu, ibu anak itu membeli

shoe that, mother child that buy

Where a non-subject NP is topicalized, ungrammaticality results. Topic Prominent languages don't constrain their topics. It might be argued that topics in Indonesian result from movement, this movement being subject to subjacency. In both cases, however, a resumptive pronoun results, which in itself suggests the absence of movement, but a requirement on coindexation between the topic and its co-referential NP, perhaps in order to receive case through a coindexed case chain.

Thus this remains extremely weak evidence in favor of the TP analysis, as an alternative analysis supporting the UTP structure exists based on principles of case-assignment in Indonesian. The final diagnostic, the basicness of the Topic-Comment sentence, also fails to illuminate the debate, as it is rather vague and could follow from some other independent

principles of the grammar. We will leave the final choice of position for topics as an open question.[22]

5.2.3. The Agentivity Hierarchy in Passive and Topicalization

Givon (1976) proposes the following hierarchy:

A. HUMAN > NON-HUMAN

B. DEFINITE > INDEFINITE

C. MORE INVOLVED PARTICIPANT > LESS INVOLVED PARTICIPANT

D. 1ST PERSON > 2ND PERSON > 3RD PERSON

E. AGENT > DATIVE > ACCUSATIVE

If we are to succeed in our partial equation of passivization with topicalization and our proposal that both arise through Theta-theory in some manner, then we must show that passivization is also sensitive to the hierarchy given above. It has been noted already that passivization is preferred on indirect objects of ditransitive verbs rather on direct objects. While a purely structural analysis of this is possible, it is interesting to note that the dative object outranks the accusative object on hierarchy E above. This results from the overwhelming tendency for dative objects to be animate and for accusative objects to be inanimate.[23] This animacy hierarchy is also apparent in some Bantu languages. Bresnan and Moshi (1990) provide data from two Bantu languages, Chichewa and Kichaga, illustrating the existence of a typological split among the Bantu languages which they characterize as symmetrical and

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[22]Presumably, the answer lies in the availability to Universal Grammar of a topic position adjoined to CP, as well as, in those languages with overt topic markers, a syntactically projecting Topic Phrase. The first possibility arises through general discourse sensitive syntactic functions, the second through the operation of the PFLP on the lexicon of particular languages.

[23]It seems fairly obvious that the following line should be added to the hierarchy above:

A'. ANIMATE > INANIMATE

asymmetrical object languages. In the asymmetrical object languages, like Chichewa, although through applicatives several objects can appear with a verb, only one of them is a privileged object, thus being able to raise under passive, trigger agreement on the verb, or undergo reciprocalization. Further, this special object status is not available to benefactive objects. In the symmetrical object languages, such as Kichaga, there appears to be no privileged object status. Any object can undergo any of the above operations, and in the case that one object has undergone one of them, another object can undergo another of them. In the asymmetrical object languages, no interaction is allowed. Once the privileged object has raised under passivization, no other object can trigger object agreement, undergo reciprocalization, etc. Thus in the symmetrical object languages you see rule interactions which are unavailable in the asymmetrical object languages. Bresnan and Moshi demonstrate that previous accounts of this data which attempted to claim that in the symmetrical object languages many arguments could undifferentiatedly fulfil the role of "direct object" are flawed in that the syntax must still be able to distinguish among the objects in both languages in two ways. (1) In both languages, there is a word order constraint that requires the verb to be initial, followed by the patient object, unless there is a **benefactive** object, in which case it precedes the patient object. (2) In both languages, the **benefactive** object cannot undergo long-distance movement. Thus these two syntactic operations demonstrate that in some way the objects must be differentiated. Bresnan and Moshi then provide an explanation for this behavior based on an account developed in earlier papers co-authored by Bresnan in which a featural decomposition of theta-roles takes place. However, Bresnan and Moshi provide no account of the structural representations of objects in these two language types. Conceding the need for the values of theta-role assignment to be visible to the syntax, in order to account for the restrictions on benefactives in both languages, I will return shortly to a discussion of the possible structures involved in these constructions, and their likely syntactic consequences.

Let us consider evidence from several unrelated languages in order to see whether (1) the animacy hierarchy is relevant to both passivization and topicalization, and (2) whether a consistent analysis exists of these phenomena in these languages given the proposals sketched above.

5.2.3.1. Coast Salish and Arizona Tewa

Certain Native American languages exhibit restrictions on passivization according to the person of the subject and object. These restrictions are best linked to the interaction between the

application of the animacy hierarchy and the application of the passive rule. The first example of this is the Coast Salish languages. Jelinek and Demers (1983) identify certain suggestive gaps in the transitive and passive verbal paradigms in several Coast Salish languages (Squamish, Lushootseed (Puget), Lummi). Consider the following paradigms from Lummi (Jelinek and Demers p. 168)

(1) Lummi transitive sentences

a-1	xci-t-oŋəs-sən	'I know you'
a-2	xci-t-sən	'I know it'
a-3	xci-t sən cə swəy?qə?	'I know the man'
b-1	xci-t-oŋəs-sx^{w}	'You know me'
b-2	xci-t-sxw	'You know it'
b-3	xci-t-sxw cə swəy?qə?	'You know the man'
c-1	*	'He/she knows you/me'
c-2	xci-t-s	'He/she knows it'
c-3	xci-t-s cə swəy?qə?	'He/she knows the man'
d-1	*	'The man knows me/you'
d-2	*	'The man knows him'
d-3	xci-t-s cə swəy?qə? cə swi?qo?əɬ	
	'The man knows the boy'	

(2) Lummi Passive Sentences

a-1	*	'You are known by me.'
a-2	*	'It is known by me.'

a-3	*	'The man is known by me.'
b-1	*	'I am known by you.'
b-2	*	'It is known by you.'
b-3	*	'The man is known by you.'
c-1	xci-t-ŋ-sən / sxw	'I/you are known' (by someone)
c-2	xci-t-ŋ	'It is known' (by someone)
c-3	xci-t-ŋ cə swəy?qə?	'The man is known' (by someone)
d-1	xci-t-ŋ-sən / sxw ə cə swəy?qə?	'I/you are known by the man'
d-2	xci-t-ŋ ə cə swəy?qə?	'It is known by the man'
d-3	xci-t-ŋ cə swi?qo?əɬ ə swəy?qə?	'The boy is known by the man'

In (1), *-t* is the transitivizing affix, in (2) *-ŋ* is an intransitivizing suffix; sentences with both have a passive interpretation. The marker for 1st and 2nd person accusative is the same. Nominative and accusative third-person pronominals are not marked. Note that fully grammatical passive/active pairs only exist for sentences in which both the subject and the object are third person. Otherwise, the subject must outrank the object on the agentivity/animacy hierarchy.

Squamish displays a similar patterning, but differs from Lummi in that first person and second person are of equal rank on the hierarchy, so that a first person object is possible if the subject is second person. Further, like Lummi, third person pronouns outrank nominals, so that if only one nominal exists in a transitive sentence, it is interpreted as object.[24] Jelinek and Demers claim

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[24]This appears to be part of a general trend in V-final null anaphora languages that given a sequence NP^V where the V is transitive, the NP must be interpreted as the object of the verb, and not the subject (cf Platero 1978 for a discussion of this constraint in Navaho).

this last fact is due to the ergative/absolutive case-marking pattern[25], making any overt nominal be interpreted in isolation as an absolutive. Lushootseed displays a less developed hierarchy:

a. 3 > N (Transitive)

b. 1 & 2 > 3 & N (Passive)

And further excludes transitive sentences with two (nonoblique) nominal adjuncts.[26] From this data we might want to posit that in the Coast Salish languages some conflation of subject and topic has occurred, with a TOPIC theta-role assigned at D-Structure to the subject position, thus providing these agentivity hierarchy effects. The obligatory interpretation of a sole nominal in a transitive sentence as object is suggestive, but we will leave it for the moment.

The second example occurs in Arizona Tewa. Kroskrity (1985) provides a general discussion of passive-like constructions in Arizona Tewa. He points out that as the active prefixes of the verb all encode a 3rd person object,

> propositions involving a non-3rd person object must be realized in the 'passive' voice. (p. 311).

5.2.3.2. Indonesian

Chung (1976) considers the evidence for two types of passive in Bahasa Indonesian. Indonesian is an SVO language. The canonical passive exhibits the following structure:

	Direct Object	Verb+ passive morphology		(oleh) Deep Subject
(15)	Ali	mem-batja	buku	itu
	Ali	TRANS-read	book	the

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[25]The actual evidence for this ergative/absolutive case-marking pattern exists solely on verbal affixes, and not on actual case morphemes on the nominals.

[26]This use of the term 'adjunct' follows Jelinek's 1984 analysis of overt NP arguments in some languages with obligatory agreement morphemes as adjuncts to the incorporated pronominals.

'Ali read the book'

(16) Buku itu di-batja (oleh) Ali

book the PASS-read by Ali

'The book was read by Ali'

The element *oleh* is optional if the former subject immediately follows the verb, thus providing evidence that the verb is still able to assign case. The second form of passive, which Chung calls Object Preposing, exhibits the following structure:

Object, Subject Verb

(17) Buku itu saja batja

book the I read

'I read the book'

The subject here optionally cliticizes onto the verb. This is noticeable in sentences with an auxiliary verb as then the subject comes between the auxiliary and the verb.

(18) Mobil itu dapat kita perbaiki

car the can we repair

'We can repair the car' or 'The car, we can repair'

In some cases the underlying subject appears in a special pro-clitic form:

(19) Buku itu ku-beli

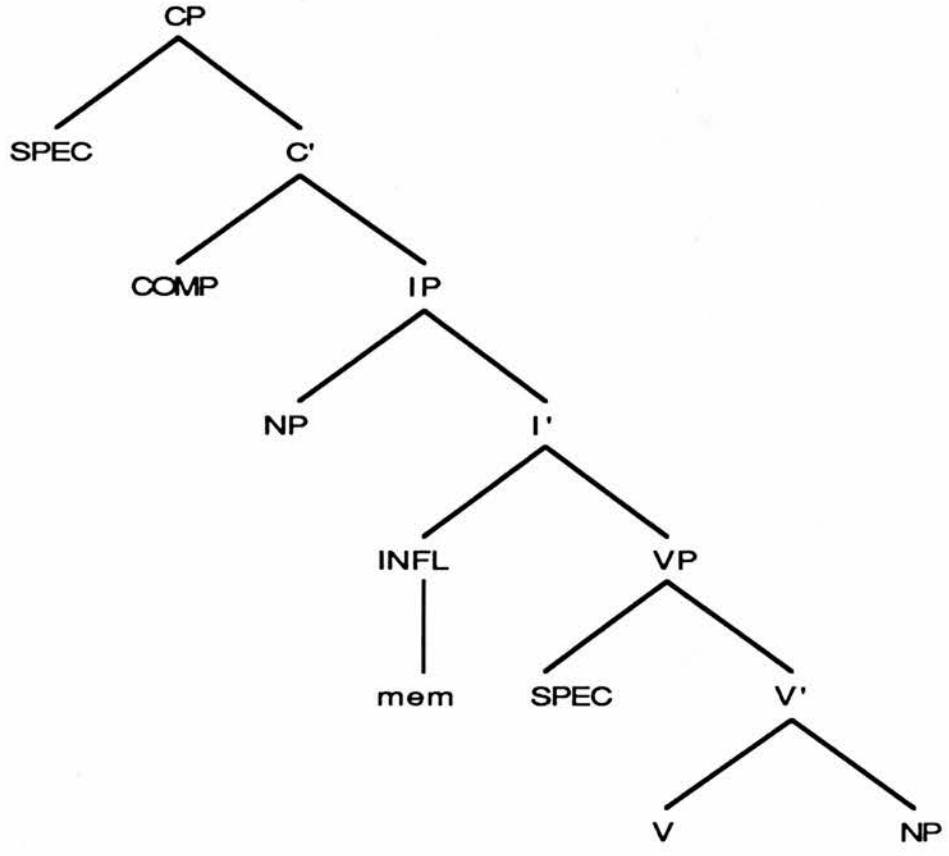
book the I-buy

'The book, I bought'

In this construction the verb appears in its stem form, and not in either its transitive or passive form. Historically Object Preposing was used when the subject was 1st or 2nd person, with

passive used elsewhere. Currently, passive is used with all persons[27]. Object Preposing is used only when the subject is a pronoun, and is ungrammatical if the subject is a lexical NP or a proper name. Further, the preposed direct object must be anaphoric or generic (i.e., not indefinite).

From this data, we see the agentivity hierarchy working in Indonesian, historically with reference to 1st and 2nd person versus the others, and currently in a restricted form with reference to definiteness and in the contrast between pronouns and nominals. Let us now consider an analysis. The primary questions to be asked with respect to this structure are: (1) Why must the subject be a pronoun?, (2) Why does the verb appear in its stem form?, and (3) Where does the Object-AUX-Subject-Verb word order arise? The first two questions suggest that some form of head movement is operative here. Consider the following structure:



[27]Though there is evidence that sentences with second person underlying subject passivize less readily than sentences with other types of subjects.

mem is the transitivizing prefix. Thus this structure underlies transitive sentences. We will also posit that the passivizing prefix also arises in INFL[28]. Thus in both cases the V moves to INFL to satisfy the Stray Affix Filter, and in the case above, in order to be able to assign case. We will assume, then, that the verb inherits its oblique case assigning potential from the element in INFL, either transitivizing *mem* or passivizing *di*. Assume further that INFL assigns case to [SPEC, IP], as in English. Thus in Indonesian INFL is the locus for all case assignment, either through direct case assignment under sisterhood to the subject, or through indirect case-assignment by verb incorporation into an affix in INFL with oblique case-assigning properties. Now consider the questions raised above. The requirement that the subject be pronominal is significant in that it requires the subject to be fully referential at the X^0 level, thus potentially allowing the subject to either incorporate, or to allow incorporation. The verb in its stem form has similar properties. So let us consider this as a case of the verb and subject merging in some sense. As the verb lacks its transitivizing prefix, it cannot assign oblique case, thus forcing the object to raise, i.e. move to a position in which it can receive case. Now we must consider the significance of the two possible word orders for subject, auxiliary and verb.

Object Subject AUX Verb

Object AUX Subject Verb

Let us assume for the time being that Indonesian base generates the subject within VP, either in specifier position, or adjoined to VP. These word orders could then arise in the following way: (1) In the first case the object raises to [SPEC, IP] in order to receive nominative case, and the subject raises from the [SPEC, VP] of the main verb to incorporate into the AUX in INFL, thus it has no need for case in order to satisfy the Case Filter as it is invisible at S-Structure, being incorporated (Baker 1988). (2) In the second case the subject remains in [SPEC, VP] where it cliticizes onto the verb. Note that this illustrates the possibility (also available given

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[28]For our purposes, this is equivalent to positing that the transitivizing or passivizing prefix head their own projections.

Baker's 1988 definition of the Head Movement Constraint) that items in [SPEC, VP] can incorporate into the verb in those cases where the verb governs them.[29]

Alternative analyses could involve raising the object to a topicalized position, perhaps adjoined to CP. Chung presents compelling arguments against this position, showing that the rule of Object Preposing (where we are treating the object as occupying [SPEC, IP]) shares various characteristics with passive, as opposed to topicalization. For example, Object Preposing is a subject-creating rule, as is passive, in that it can occur in a lower clause and thus feed Subject to Object Raising.

(20)	Mereka	anggap	(bahwa)	buku	ini	sudah	saja	batja
	they	believe	that	book	this	PERF	I	read

'They believe that this book, I have read'

(21)	Buku	ini	di-anggap	(oleh)	mereka	sudah	saja	batja
	book	this	PASS-believe	by	them	PERF	I	read

'This book is believed by them to have been read by me'

(22)	*Saja	di-anggap	(oleh)	mereka	buku	ini	sudah	batja
	I	PASS-believe	by	them	book	this	PERF	read

'I was believed by them this book to have read'

The examples above illustrate that in the case of Object Preposing applying to a sentential complement, the preposed object can undergo passivization, but the deep subject cannot. Our account predicts this in two ways; the preposed object is not in an ungovernable position, as adjoined to CP would be, and thus can occur in a sentential complement, and further the subject cannot move as it is incorporated into a verbal element. Chung also demonstrates that Object

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[29]Alternatively, we could argue that the verb raises to [SPEC, VP] in order to cliticize onto the subject. In this case the subject must still be referential at the X^0 level, and the verb must lack any case-assigning prefixes and appear in its stem form.

Preposing is clause-bounded, as are passives (and not topicalizations), and is subject to lexical exceptions, again more like passive than topicalization. In particular, the verbs 'want', 'resemble', 'own', 'trust', and 'wreck' do not allow object preposing.[30]

'Yes-no' questions in Indonesian are formed by an overt question morpheme in COMP. As we see below this element precedes a preposed object.

(23) Apakah kamu makan makanan itu?

QUES you eat food the

'Did you eat the food?'

(24) Apakah makanan itu kamu makan?

QUES food the you eat

'Did you eat the food?'

Indonesian also displays a rule of WH-movement in the syntax. This provides further evidence for our analysis of object movement to [SPEC, IP]. Consider the following data:

(25) Kepada siapa, kamu kirim-kan surat itu?

to who? you send-BEN[31] letter the

'To whom did you send the letter?'

(26) Kepada siapa, surat itu kamu kirim-kan?

to who? letter the you send-BEN

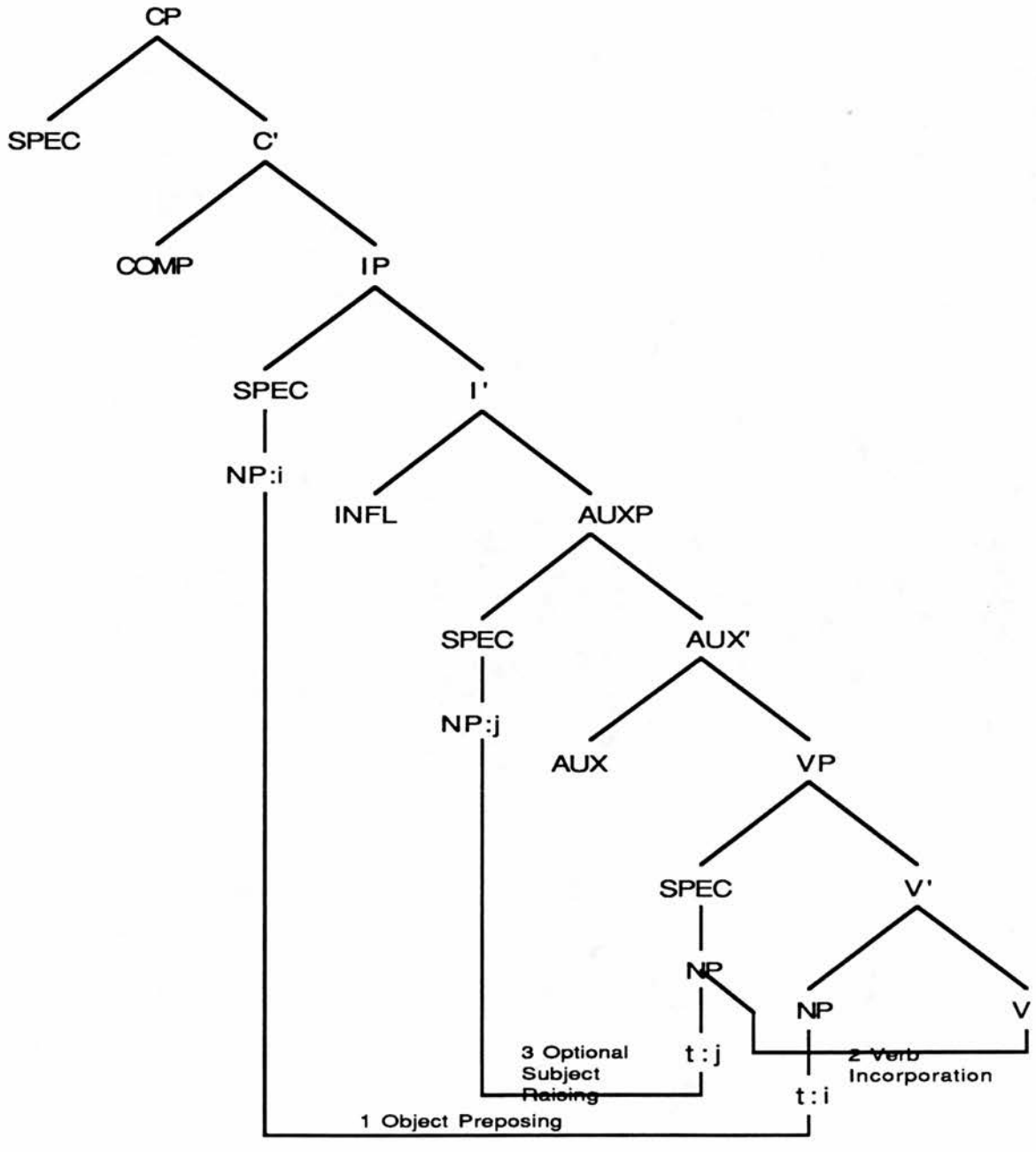
---

[30]However, the classes of verbs which do not allow Object preposing differ from those which do not allow passive.

[31]This benefactive suffix acts as a profligate oblique case assigner, thus allowing ditransitives. However, its presence in an Object Preposing sentence suggests that we cannot force object raising through lack of case assignment alone.

'To whom did you send the letter?'

And finally, although in general unspecified agent deletion is permitted (as in the case of passive) it is not allowed in Object Preposing sentences, and neither can the deep subject be focussed or moved in any way. Thus the structure which is created by Object Preposing renders the deep subject undeletable and immovable, as we would expect if it forms a complex with the verb. Consider the following tree diagram:



This illustrates the three possible movement operations that can take place in Indonesian Object Preposing constructions. The first, Object Preposing, is obligatory in those cases where the verb projection lacks a transitivizing prefix, thus the object must move in order to receive case. Further, this is only possible if the subject is a pronoun, and is thus referential at the X^0

level, thus allowing it to form an incorporation structure with a verbal element (either AUX, if present, or the verb). This is represented by operations 2 and 3 above. The posited operation of verb incorporation is somewhat problematic. It could perhaps better be thought of as arising when SPEC-head coindexing between subject and verb manifests itself as what Chung has identified as a pro-clitic subject (an agreement morpheme in this analysis), thus allowing subject pro-drop.[32]

5.2.4. NP-movement

In order to handle NP-movement, Chomsky (1986a) must make two controversial moves; (i) He must consider cases of embedded VPs (for the auxiliary system) as special cases of adjunction structures; (ii) He must then allow the traces of verb-movement to properly govern the trace of NP-movement through some form of SPEC-head coindexing. No matter what internal problems this analysis has, it cannot be maintained within the analysis of verb-raising of Cann and Tait (in prep), in which it is very difficult indeed to interpret the nested VP structure as any kind of adjunction structure. Suppose then, that we interpret the [SPEC, VP] position as an A-position. This prevents us from using it as a landing site for WH-movement. For Wh-movement we must then accept Chomsky's analysis involving VP adjunction.[33] For NP-movement, however, we can use [SPEC, VP]. This means that [SPEC, VP] is interpreted in much the same way as [SPEC, IP]. It is a position of potential theta-role assignment, but allows movement through substitution in those constructions in which is it not assigned a theta-role. It is, however, an argument position, and thus participates in A-chains, but not A-bar chains. This analysis is pursued further in the next chapter, in which a revival of Subject to Object Raising is defended.

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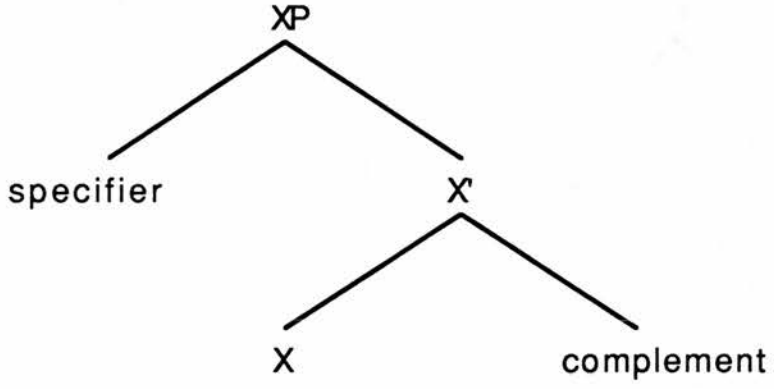
[32]The problems involved in formalizing such a rule, complete with the accompanying constraints in order to get the effects of incorporated pronouns (which cannot co-occur with a lexical subject), and to ensure that any subject in this structure is pronominal, may in the end favor the verb incorporation analysis. It does, however, offer novel data whether looked at in terms of subject-into-verb or verb-into-subject incorporation.

[33]But, see Chapter Eight for a new definition of barrier which does not require the availability of VP adjunction to allow object movement.

Chapter 6. A Consideration of Specifier Position

The move from potentially infinitely variable phrase structure rules to a system of constraints on syntactic representations known as X-Bar Theory (Jackendoff, 1977) has had a number of interesting consequences. In order to make the grammar maximally learnable and maximally general, there had to be a way of narrowing the class of potential tree representations for a given string. One proposal has been to limit the trees to binary branching structures (Kayne 1984). Although such a move adds greatly to the depth of trees, it also makes such important features as 'head' daughter much more tractable. The X-Bar schema (see diagram below) as generally accepted produces a strong constraint on tree representations.



This schema represents a binary branching tree structure in which a lexical head projects to the single bar level, having as sister any subcategorized-for constituent. At this level of the tree case assignment generally is assumed to occur (at S-Structure), lexical government holds, and a lexical head will L-Mark (lexically mark) a phrasal sister, thus preventing a sister from being a barrier to movement. At the next level up, the single-bar projection of the head takes as sister any specifiers it may have. While the status of complements is fairly clear, the status of the specifier position is not very well understood. In categorial grammar terms, the specifier for a category such as NP was the determiner, which mapped a nominal into a referential expression (NP). Although providing a strong constraint on tree representations, this schema poses problems for structures which were previously considered to be multiply branching. For example, ditransitive verbs in English, or verbs such as *put* which take an NP and a PP

complement. Adopting a binary branching tree forces the analysis to privilege one complement over the other. Larson (1988) proposed an analysis of double object constructions which utilizes the [SPEC, VP] position for one of the objects.[1] We adopt a modified form of his proposal in which the indirect object is in [SPEC, VP], with the direct object as sister to the head V. An operation similar to passive demotes the indirect object to a prepositional phrase, giving the string V, NP, PP, otherwise, the verb moves to INFL to pick up tense, giving the string V, NP, NP . In general, the position [SPEC, VP] has been a site of much contention. Some analyses posit the subject at D-Structure in [SPEC, VP] (Koopman and Sportiche 1986).

The analysis which I will present is one in which the learner has access to the schema in the figure above through Universal Grammar. The learner must then deduce which categories are eligible to project as heads in the syntax. The only syntactic projections which are given by Universal Grammar are INFL and COMP. The rest of the syntactic categories are language specific. As we will see later, the position that INFL and COMP and their syntactic projections are part of Universal Grammar is not unanimously accepted, nor without problems in the analysis of certain languages. Hale (1989) assumes for certain languages that V and I have syncretized into a single category. The motivation for this is to account for languages in which there is no evidence for a VP at the level of syntactic representation. However, little argumentation is given in support of this claim, and it must be taken as pretheoretical.[2] The treatment of INFL and COMP as exceptional is implicit in much work, including Chomsky (1986a), in which they are distinguished from V, N, P and A as non-lexical categories. The proposal above can be seen as providing a more rigorous definition of what the consequences are of being a lexical category, that is, they are language specific and are not given by Univeral Grammar. The question for the account of acquisition that now arises is what is the crucial evidence that leads a learner to posit a category as one that has a projection into the syntax. To give a simple example, consider the analysis of Abney (1987) in which not only do the

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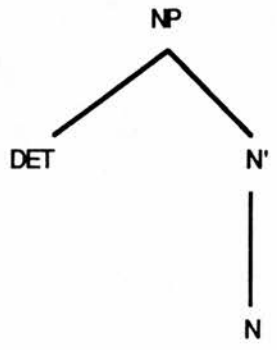
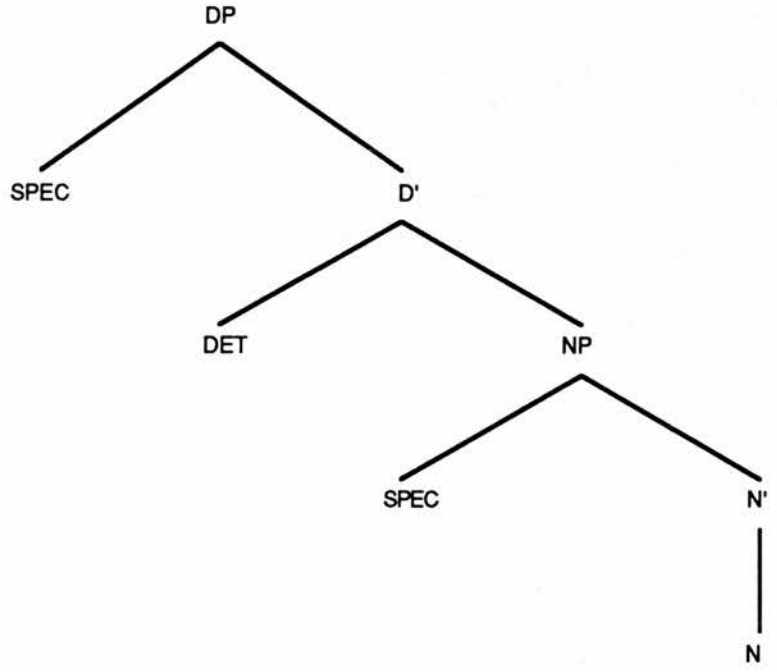
[1] I return to a discussion of Larson's account in a later section.

[2] Various accounts of word order variation in Germanic and the V2 effect have argued for the syncretization of COMP and INFL in Modern German (Platzack 1983).

functional categories COMP and INFL project into the syntax, but also, more surprisingly, functional categories such as DETERMINER (or DET). Under Abney's analysis, what was formally considered a Noun Phrase is now a Determiner Phrase (DP).



This figure illustrates a simplified NP structure according to the X-bar schema, assuming N to be a lexical category which projects into the syntax.



This figure illustrates the analysis of referential expressions as determiner phrases, in which both DET and N are lexical categories which project into the syntax.[3]

Under this analysis, the determiner appears as the head of a syntactic projection, DP, which takes an NP as a subcategorized-for argument. Semantically, this analysis has many interesting possibilities. It allows the representation of the dependency between certain determiners and the number of the complement noun as an instance of subcategorization, rather than as arising through some system of feature passing. It also provides for many new positions within the 'NP'. NP structure has traditionally been difficult within the X-bar system. Partitive constructions, quantifiers, adjectives both pre and post-nominal, all have required an internal structure for NP of a greater level of complexity than any other projection, including VP. [SPEC, DP] is the position of genitives in English (Cann & Tait 1989), with the possessive ending *-'s* a bound DET head.

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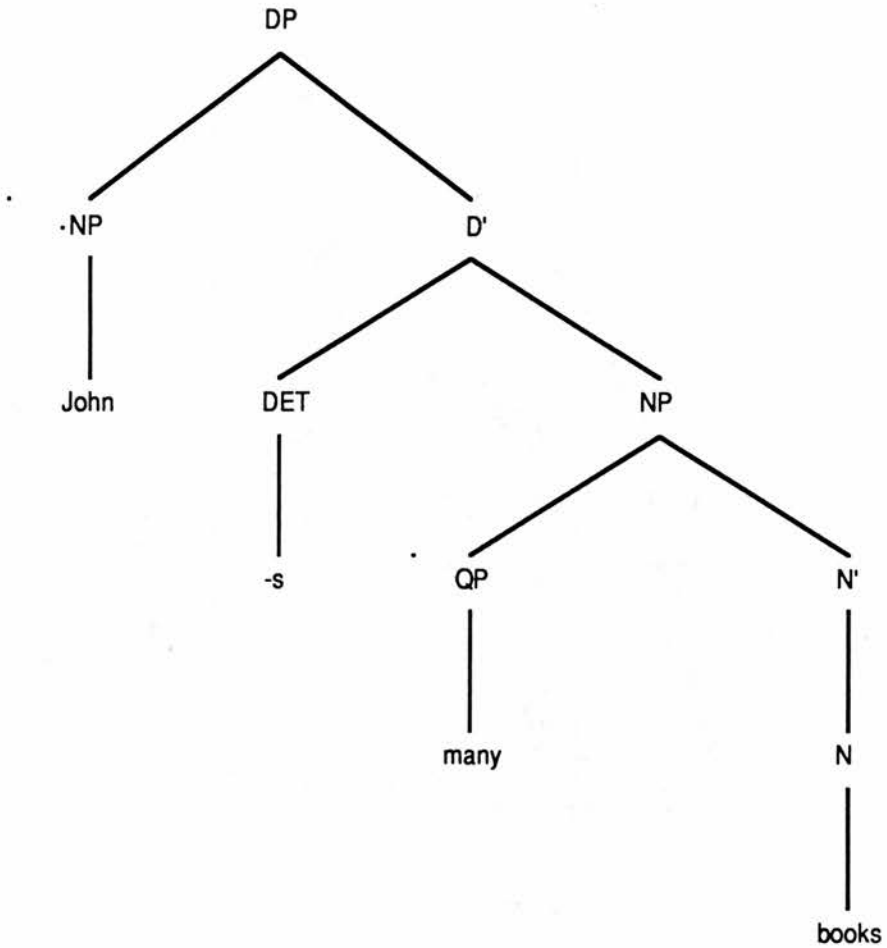
[3]The structure of DPs posited in this thesis differs somewhat from the original proposals of Abney, in particular, no feature percolation mechanism operates to override the category of the maximal projections.



This analysis accounts for the phrase-final position of the possessive ending and also suggests that [SPEC, DP], following a general tendency of SPEC of lexical categories, is not merely a landing site for movement but is an argument position (i.e., a position which can receive Case and/or Theta).

Issues of learnability, or generality, of the DP construction arise. As many languages have no determiners there is insufficient evidence for the learners of such languages to posit an underlying DET projection. The analysis proposed above accounts for this by allowing for cross-linguistic variation as to whether DET is a lexical category which licenses a syntactic projection or not. In a language like English, with extensive determiners, obligatory in many

constructions, the learner is exposed to sufficient evidence to posit DET as a syntactic category. In a language like Lakhota (Siouan), in which determiners are non-existent, the learner would represent referring expressions syntactically as NPs.[4] Another possibility is to claim that the underlying syntactic representation for all languages utilizes the same set of lexical categories projecting into the syntax. This proposal quickly leads to absurdity as the underlying structure for sentences of any language would possess projections of categories which never appeared at PF in that language. The SPEC position of these projections would have to be specified as opaque to movement, and in general the part of the tree arising as a projection of an 'invisible' category would have itself to be 'invisible' to syntactic rules in that language, such as providing sites for movement or adjunction, or as providing barriers to movement. An analysis with maximally simple tree diagrams must be preferred over one with more complex diagrams, all things being equal, and a grammar which provides for maximal learnability over innate structures must also be preferred, again under the same conditions of neutrality with respect to explanatory power.

As mentioned above, the status of the specifier position has resisted a unified treatment. It is generally accepted that [SPEC, CP] is the landing site for WH-movement. It is an A-Bar position, that is, it is a position which is never occupied by an argument at D-Structure (and is thus neither case nor theta-marked). It is empty at D-Structure, and only becomes occupied through application of move-WH, then being filled by the WH-expression itself, or by a WH-trace. [SPEC, IP], on the other hand, is the D-Structure position for subject. It is thus an A-position, (argument position) and can be assigned case and theta-roles. Already, considering the SPEC position of non-lexical categories COMP and INFL we see significant variation in the status of SPEC. When we turn our attention to the lexical categories we do begin to see some pattern emerge. As we saw with [SPEC, DP] and [SPEC, NP] above, SPEC cannot be a landing site for movement. If it were, there would be no way of blocking extraction from noun phrases.

(1) The fact that the weather is awful deterred the swimmers.

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[4]A system of demonstratives, which can also function pronominally, can modify noun phrases to give a definite determiner reading.

(2) *What (did) the fact (that) is awful deter the swimmers?

If we assume that [SPEC, VP] is also unavailable as a landing site then we arrive at the conclusion that the SPEC position of lexical categories is not available for substitution operations (such as WH-movement) but is a potential argument position, and, like the complement position, is controlled by the lexical properties of the head[5]. This can be seen as a case of SPEC-Head coindexing:

> a form of feature sharing, similar to theta-government (Chomsky, 1986, p. 24).[6]

I will adopt a version of SPEC-head coindexing (or SPEC-Head agreement as Chomsky calls it) but will not use it in an Exceptional Case-Marking (ECM) account, as there are various difficulties with that analysis as seen in the following data.

(3) I would like for him to be there.

(4) I would like him to be there.

In most dialects of American English, both are equally acceptable, thus posing a problem for Chomsky's analysis. In order to maintain his analysis of sentences such as (4), (those lacking an overt *for* complementizer), Chomsky must maintain one of two analyses for (3). (i) *like* can subcategorize for either an IP or a non-finite CP. In the case of the IP complement, the verb assigns accusative case to the embedded subject through the process of SPEC-head agreement. In the case of the CP complement, the complementizer *for* assigns case (also accusative) to the

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[5]We shall consider evidence in a later section that allowing [SPEC, VP] as a landing site for movement provides a neat account of ECM constructions, and vitiates the need to posit adjunction to VP as a means of escaping the barrier of VP.

[6]Chomsky initially proposes this in order to account for the properties of 'exceptional case-marking' verbs, thus allowing an ECM verb to take an IP complement (rather than a CP), which it L-marks under sisterhood. By the process of L-marking IP, the verb in effect L-marks the entire projection of INFL. Through this process of SPEC-head agreement the verb can case mark [SPEC, IP] through L-marking its coindexed head.

embedded subject. (ii) In a sentence such as (3) *for* is not a complementizer but is some other sort of category which has cliticized to the embedded subject. The second analysis is difficult to take seriously, as it leaves many questions open as to the exact status of *for*, and why it behaves exactly like a complementizer in sentence-initial constructions. The first analysis lacks generality and explanatoriness. Why a verb should subcategorize for either an IP or a CP complement is not explained, and there is no interesting semantic distinction between the two. The appearance or not of the complementizer *for* seems to parallel the behavior of *that*, thus suggesting some underlying similarity between the two which is founded in their syntactic category COMP.[7] The first analysis must miss that generalization. Also, the fact that the subject of the embedded sentence must receive accusative case in both instances is not explained.[8] A further problem arises in the treatment of PRO in sentences like the following:

(5) I would like PRO to go.

According to Chomsky's analysis of sentence (4), *like* in sentence (5) must take an IP complement. Also, the V must L-mark the IP, and thus L-mark [SPEC, IP], i.e., PRO. Therefore, PRO in (5), like *him* in (4), is governed by the matrix verb. But PRO must be ungoverned, therefore the analysis must be changed in some way.[9]

We could assume as a working hypothesis that [SPEC, lexical category] is an A-position and that [SPEC, non-lexical category] is an A-bar position. Unfortunately, this has the wrong

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[7]It could be that this property of being able to delete complementizers under certain conditions falls out of a version of the PFLP extended to non-lexical categories. That is, if there is enough PF content to identify an expression as a CP then the head of the CP, the complementizer, can be omitted. This generalizes the PFLP which for lexical categories only applied to SPEC- head relations.

[8]Although this could be thought to follow in English from the generalization that only [+tense] INFL can assign nominative case, all other case assigners, whatever their status, assign accusative (oblique) case.

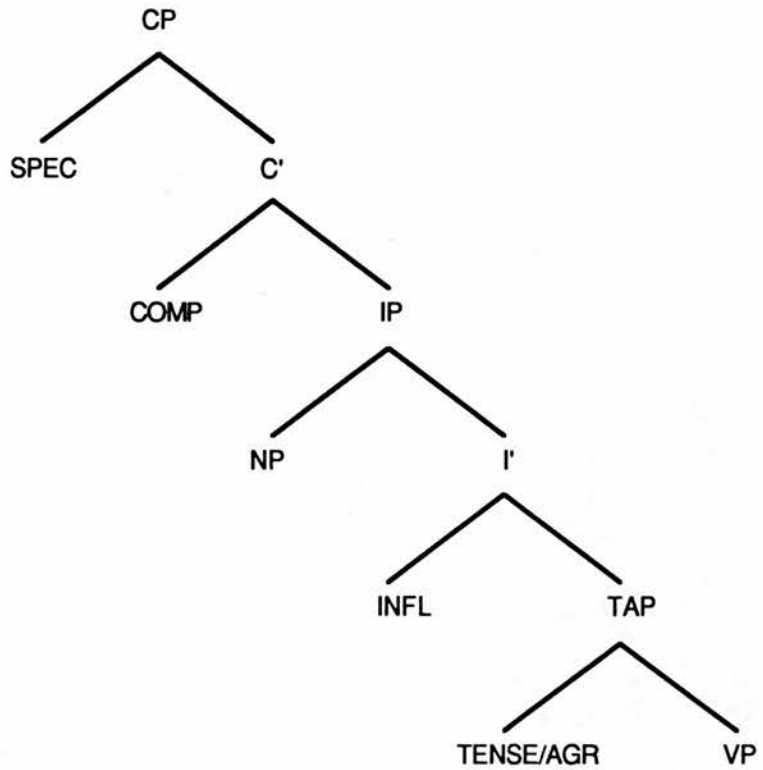
[9]It could be argued that this variable IP/CP complement follows from extending the PFLP in a straight-forward way to include all projections, not just the lexical ones. Thus when the COMP *for* is present, the CP projection is also present, and vice versa.

consequences for INFL, which, if the subject is indeed base-generated in [SPEC, IP], behaves like a lexical category. The neatest analysis we could hope for would treat [SPEC, non-lexical categories] as sites for movement; [SPEC, CP] for WH-expressions, [SPEC, IP] for topicalizations (following the analysis of Italian in Tait & Cann 1990). However, this raises the problem for English of where the subject arises in D-Structure.

6.1. SPEC as a Movement Site

As we saw above, in some cases the specifier position is a potential landing site for movement. However, the properties of the specifier position for COMP and INFL differ considerably. [SPEC, CP] is always an A-bar (non-argumental) position, which does not receive structural case and cannot be assigned a theta-role. [SPEC, IP], on the other hand, is an A-position, receives structural case, and can be assigned a theta-role.

It would appear, at least on an informal level, that INFL is, in English, part lexical category, and part non-lexical category. This is not a very desirable result. If CP and IP are taken to be categories implicit in Universal Grammar, and thus evident in all human languages, you would imagine that their SPEC positions would have a consistent interpretation universally, rather than being treated as a sort of 'free' position subject to extensive cross-linguistic variation, although, this latter option may indeed prove to be the case. We see this dichotomy in the interpretation of [SPEC, IP] in Tait and Cann (1990) where it is argued that this position in Italian is not the D-Structure subject position but is a topic position available for movement. In the case of English they argue for the following structure in which subject arises in [SPEC, IP] at D-Structure.



The authors argue for a syncretized projection of Tense and Agreement in English, which accounts, in part, for the lack of null subject phenomena. The part of their argument based on learnability hinges on the incomplete paradigm of agreement in English. That is, agreement is only expressed for third person singular, which is not sufficient to PF-license a syntactic projection of AgrP. Further, agreement is only expressed morphologically in the present tense, so that the third singular agreement affix *-s* only occurs in present tense. Morphologically, present tense and third singular agreement have syncretized into a single suffix. This provides sufficient evidence for a learner to posit the syncretized projection, Tense-Agreement Phrase (TAP). I will return to the issue of sufficient evidence in learnability, and will consider the role of paradigms in language acquisition. The prediction is that children are sensitive to paradigms at an early age (cf. Hyams 1989) and use them to derive the syntactic representation of the grammar they are acquiring.

The fact that TAP is a syncretized phrase gives it a degenerate syntactic projection, that is, it has no specifier position. Tense-Agr is immediately dominated by TAP. This lack of a specifier position for syncretized categories could be a general property of such categories, or could follow from SPEC-head coindexing in this particular case. Tait & Cann assume that Agr is a [+N], category, whereas Tense is a [+V] category. Anything appearing in specifier position would have to share these general categorial features. As these are categorially incompatible, nothing could appear in the SPEC position and satisfy the coindexing requirements.[10] Alternatively, we could allow TAP to have a specifier position, and allow subject to be base-generated there in English, but not allow SPEC-head coindexing to hold, due to this feature clash. This would prevent the subject from being PF-licensed, thus it could not be 'dropped'. Case assignment properties of INFL would then require the subject to raise to [SPEC, IP], a position of case-assignment.

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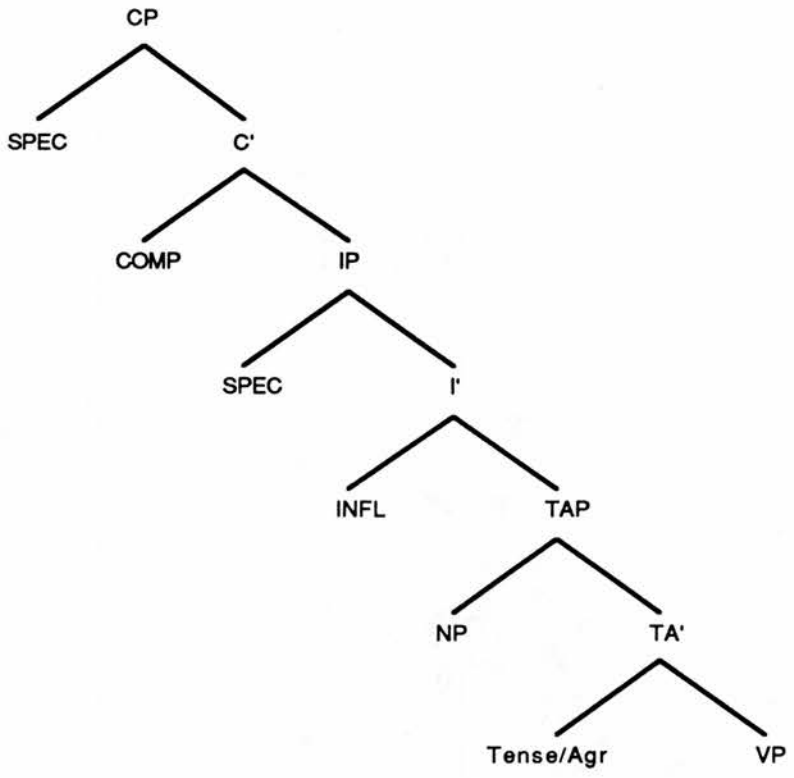
[10]Although this has received little discussion in the literature, it seems to be a general property of specifier positions that anything filling them must unify categorially with the head of the phrase through SPEC-head coindexing. [SPEC, CP] is a [+N] position, as CP is in some ways equivalent to NP. It might be argued that [SPEC, IP] is a [+V] position, as IP is not equivalent to NP. Bare IPs, as in *him to win* are not possible arguments. On the other hand we could consider any projection within a tree that includes a verb but excludes one of its arguments to be a [+V] projection. This would make [SPEC, VP] a [+V] position. A problem this conception raises for Tait and Cann's analysis is that this would then predict that no NP could occur in a [+V] SPEC position. However, if we exclude those categories from SPEC-head coindexing which are governed by the head, then the appropriate conditions hold.



Thus [SPEC, TAP] is a position of theta assignment, but not case assignment. The subject NP must move to [SPEC, IP] to receive NOM case, and to satisfy the case-assigning property of INFL.[11]

6.2. SPEC as a Position of Case and Theta Assignment

The specifier position of a lexical category, however, is generally not a landing site for movement. It can however be a position of theta-assignment. In general, then, any position of theta-assignment cannot function as a landing site. In part, this reduces to Chomsky's (1981) prohibition against movement to 'argument positions'. A general constraint on movement to argument positions (i.e., positions of theta-role assignment) led to the restriction of possible raising constructions to subject raising in sentences like the following:

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[11]INFL in English is a bi-unique case assigner, in that it must assign NOM case, and can only assign it once.

(6) seems John to be unhappy.

(7) John seems t to be unhappy.

Here the subject of the lower clause has raised to [SPEC, IP] position, a non-theta-marked position for the verb *seem*, in order to receive NOM case from INFL. Verbs which assign a theta-role to [SPEC, IP] do not allow raising of a lower subject. The analysis of passive also makes use of the raising of an object to [SPEC, IP] under the condition that the verb is in the passive, and thus does not assign a theta-role to its subject position (Fabb, 1984). Although Chomsky specifically blocks raising-to-object whether the verb assigns a theta-role to an object position or not, raising-to-subject depends on the class of verbs (subject-raising verbs) but can also apply to any verb if it has a passive form. Thus raising-to-subject is much less constrained than raising-to-object, which is blocked categorially. Given the arbitrary nature of this constraint against movement to argument position (which is defined differently according to whether it is subject or object position), we might wonder whether the case against raising-to-object is sufficiently strong.[12] As the analysis of ECM which replaced earlier object-raising analyses is not in itself particularly attractive, it might be worthwhile to re-evaluate the case against raising to object, though in the process of doing so we may have to abandon our typology of SPEC positions.

6.2.1. Raising to Object Revisited

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[12]We might want to analyze certain dative-shift-like constructions in English as a kind of raising construction. Consider the following:

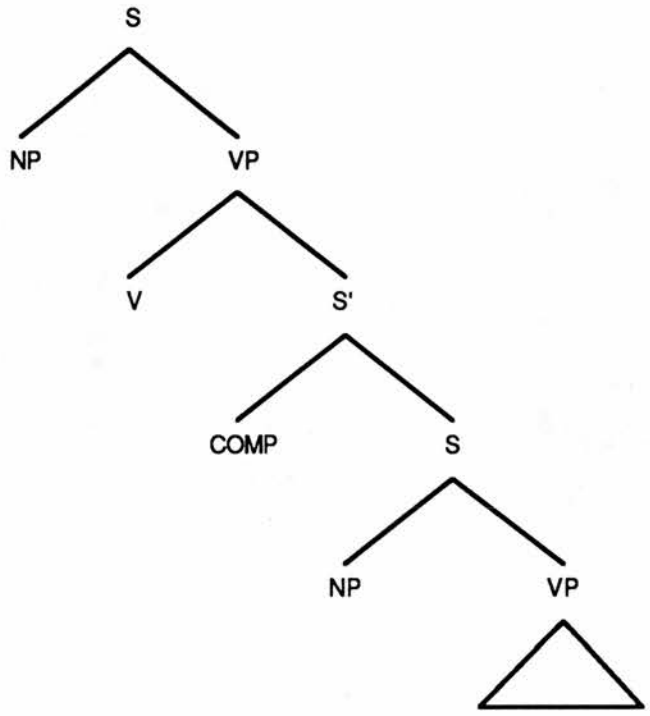
(i) Sally baked a cake.

(ii) Sally baked a cake for John.

(iii) Sally baked John a cake.

In order to differentiate these in underlying structure from true ditransitive verbs such as *give*, the optional benefactive NP should appear in an adjunct position. A raising process can then move it to the [SPEC, VP] position following Larson (1988).

Raising to Object constructions have been extensively treated (Postal 1974). The essence of the analysis was to postulate that certain verbs were marked in the lexicon as to their properties with respect to any argumental clauses. Raising verbs took an underlying sentence as an argument.



The figure above illustrates the tree configuration for a verb such as *believe, expect*, etc. These verbs take a finite or a non-finite complement clause.

(8) I believe that he is late.

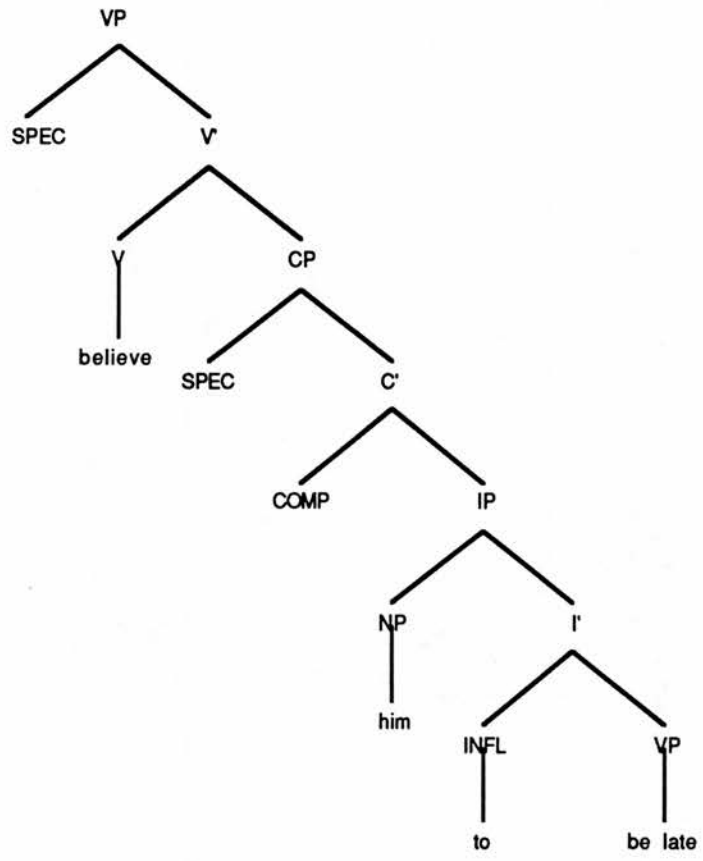
(9) I believe him to be late.

Subject-to-object raising had several effects; the complement clause became non-finite, therefore the verb appeared with the *to* infinitive marker and in its non-finite form, the complementizer *that* was deleted, and the subject appeared in the accusative case (visibly in the case of a pronominal subject). Like the current ECM analysis, this analysis had to specify

crucially that the verbs are marked in the lexicon as to whether or not they allow this transformation. However, any account of this data will have to stipulate this in the lexical entries, as the variation cannot be driven semantically or morphologically. Also, the transformation itself had many properties which became unattractive to later researchers - the deletion of lexical items, and the changing form of the verb, all were too language specific for a generalization to move-alpha. These facts, coupled with the general prohibition against movement to (some) argument positions, led linguists to posit a new analysis of these 'raising' constructions, and the ECM analysis was born.

If we attempt to extend the interpretation of argument positions used for subject position to object position in order to facilitate an improved raising-to-object analysis, we encounter an initial difficulty. Given the binary branching tree discussed above, what is the position that an underlying subject could raise to?

Consider the following representation of a VP containing such a construction:



Assume for the time being that *him* receives accusative case from the verb *believe*. Then the question is, how does it get this case? If we wish to avoid the problems mentioned earlier with the ECM analysis of Chomsky (1981) then *him* must move in order to come within the government domain of *believe*. There are several positions potentially available. It could raise to [SPEC, CP][13] . This is movement from a non-case-assigned theta-position to an A-bar position. In general, case is not assigned to an A-bar position, so if *him* is to get case in this position we are back to some account of exceptional case marking. Given the binary tree structure, there is no other position available to the right of the verb. If there were, *him* could

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[13]Assuming that it is a CP and not an IP which the verb takes as complement.

raise to [SPEC, CP] and from there to the other position, using [SPEC, CP] as an 'escape hatch'. Once an element has moved to an A-bar position it can only move to other A-bar positions. This results from a constraint on the well-formedness of chains. Therefore, if we are to make use of [SPEC, CP] as an escape hatch *him* will have to raise to an A-bar position, that is, a non-theta-marked position. Consider, in this regard, [SPEC, VP]. This position is a theta-bar position (i.e., is not assigned a theta-role). It is therefore a possible landing site for movement from [SPEC, CP]. CP is not a barrier to movement as it is L-marked by the verb. If the verb moves to INFL to pick up tense, then *him* will be to the right of the verb at S-Structure and thus in a position of case-assignment.[14] Note, however, that according to the constraint on head-movement of Cann and Tait (1990) head-movement is not allowed over a filled specifier position. It would appear from this data, and from the evidence of Subject-Auxiliary inversion, that heads can move over filled specifier positions which they L-mark in some way, either through theta-assignment, or through case-assignment.

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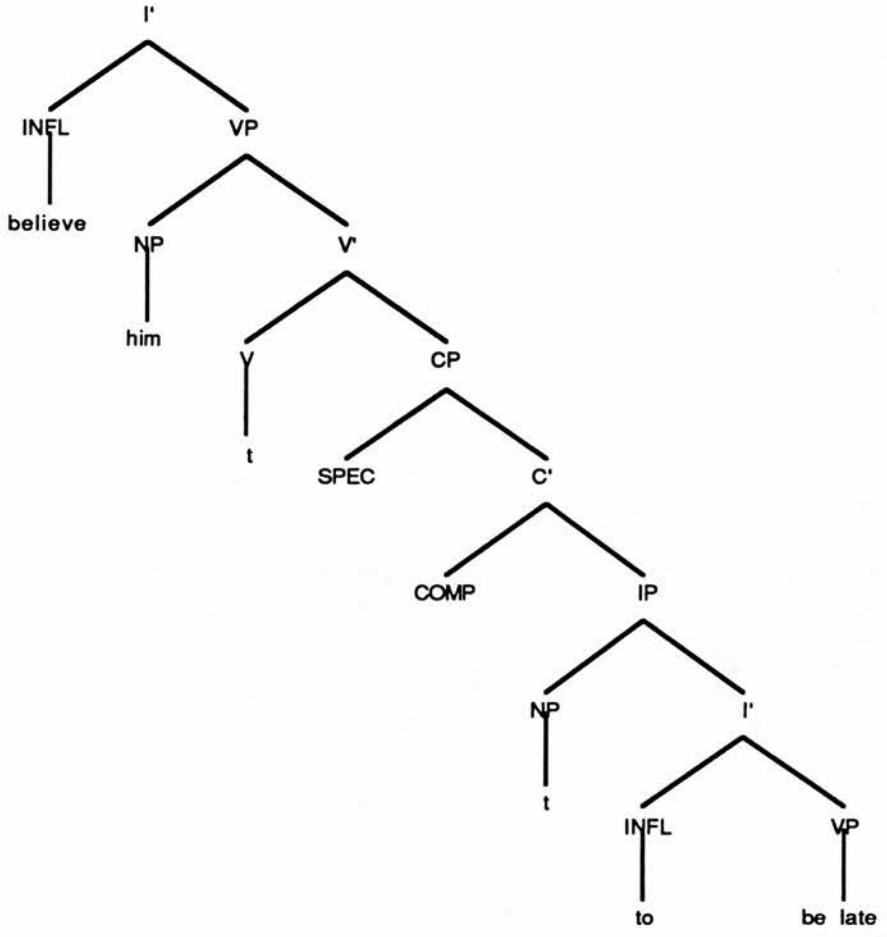
[14]Verbs in English are profligate case-assigners and thus will assign Accusative case freely, or not at all. Transitive and intransitive verbs do not differ with respect to their case assigning properties. The appearance of extra arguments is not constrained by case theory, but by theta-theory. Given the slight alteration to the treatment of Passive proposed earlier in which it is not the lack of case which forces an object to move to subject position, but the case-assigning properties of INFL, a bi-unique case assigner in English. This analysis then accounts for passives of ditransitive verbs, in which one of the objects remains in position and receives accusative case, as in *John was given a book.*, which poses problems for the analysis of passive which removed the case-assigning potential of the passivized verb.



This tree diagram shows the I' level projection for a sentence such as *I believe him to be late* under a Raising analysis. In a sense this is not a 'raising to object' analysis, as it does not involve raising to canonical object position, [NP, V'], but to [SPEC, VP]. This analysis predicts that there can be no 'raising to object' verbs in English which are ditransitive, assuming the revised version of Larson's analysis of double object constructions given above, as the specifier position of VP won't be available as a landing site. Consider the following data involving *ask*, a verb which can take a direct object as well as a sentential complement.

(10) I asked Bill for John to be allowed to go.

(11) *I asked Bill John to be allowed to go.

The sentence illustrating raising-to-object of *John* is clearly ungrammatical. There appear to be no verbs in English which would yield grammaticality in this construction. If this prediction does hold, then this analysis provides an explanation for what is otherwise an arbitrary gap in the lexicon.

I have proposed various changes to Larson's proposal without much argumentation against the original version, other than showing that my revisions have desired consequences. Jackendoff (1990) presents compelling arguments against Larson's analysis (Larson 1988). First he shows that Larson does not fully deal with the data presented in Barss and Lasnik (1986) suggesting that reference to linear order is necessary in the definition of binding domains. Then Jackendoff concerns himself with certain weaknesses in Larson's analysis itself. These are: (1) the extension of the demotion of subject in passive to the demotion of the THEME argument in ditransitives in dative shift makes false predictions about the binding of reflexives in the lower NP.

> Larson has created a structure analogous to the passive in order to account for the possibility of binding in (1a), yet binding is not possible in the very passive structure to which the analogy is drawn. (pp. 438-9)

(2) Larson's analysis makes the two object NPs into a constituent, however they fail every test for constituency other than Gapping,[15] which is not generally acknowledged as a test of constituency. (3) Although Larson uses the Uniformity of Theta-Assignment Hypothesis (UTAH) to drive various parts of his analysis, he himself fails to respect it. For example, the direct object is in [SPEC, VP], while in the shifted version it is adjoined to V'.[16] (4) Most

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[15]These tests are Clefting, Pseudo-clefting, Topicalization and Right Node Raising.

[16]A further argument against Larson based on UTAH consists of the observation that transitive verbs assign their THEME argument regularly to the direct object position, [NP, V'], sister to the verb head. In Larson's account the THEME argument is assigned to [SPEC, VP] unusually in the case of ditransitive verbs. The account I propose is somewhat similar to Larson's, but reverses the positions of the object NPs, thus obeying UTAH on this point, and rendering the endless empty headed VPs and all the movement unnecessary.

importantly, Larson must assume that assignment of theta-roles occurs after various movement rules have applied, in clear contradiction to current accounts which hold that theta-role assignment takes place at D-Structure.

> Consider theta-assignment to the subject of *send*. The subject lies outside the maximal projection of *send* in D-Structure, namely the lower VP. Therefore *send* cannot theta-mark its subject until it has raised into the upper VP. In other words, theta-marking has suddenly become a derived structure property. This constitutes a radical shift in theory. As far as I can tell - the text is somewhat tricky - Larson endorses this conclusion on pages 383-384, without pointing out the break with tradition. I find it difficult to envision the consequences of this shift for the status of D-Structure in syntactic theory; they might in fact be quite desirable, but further discussion is called for. (pp 450-451)

Larson further alters existing theory with regard to modifiers. Rather than treating modifiers as outermost complements, they become the innermost complements. As Jackendoff points out:

> Structure (70), furthermore, flouts an even more basic tradition, strongly based in empirical evidence: it completely neutralizes the structural distinction between arguments and modifiers. As a result, there is no basis for such well-known structural differences as those illustrated in (71).
>
> (71) John, in the morning, wrote a letter (to Mary).
>
> *John, to Mary, wrote a letter (in the morning).
>
> *It was the morning that John wrote a letter (to Mary) in.
>
> It was Mary that John wrote a letter to (in the morning).
>
> John wrote a letter in the morning and Fred did so in the afternoon.
>
> *John wrote a letter to Mary and Fred did so to Harriet. (pp. 452-453)

Jackendoff closes with the following observations:

> To sum up, Larson's proposed D-Structure representation, whatever its other virtues, violates two of the most longstanding and robust hypotheses of syntactic theory: (1) that a verb's argument structure is represented locally at some level of syntactic structure, and (2) that there is a structural distinction between arguments and modifers.

> The form of Larson's argument - and its flaws - are reminiscent of argumentation within the tradition of "Abstract Syntax" that flourished in the middle and late 1960's, the immediate progenitor of Generative Semantics . . . Current lore equates Abstract Syntax with Generative Semantics, and holds that Generative Semantics failed because it was too unconstrained. The Generative Semantics approach, I have been told more than once, now deserves to be reconsidered because the present theory of grammar is so much more highly constrained. However, the proper point of comparison, I suggest, is with Abstract Syntax. Abstract Syntax failed not so much because of a lack of constraints, but rather because its constraints were too rigid to account for facts of lexical variation, lexical generalization, and surface syntactic distribution. This is the gist of the argument in such early lexicalist works as Chomsky (1970) (against the transformational derivation of nominals), Bresnan (1969) (against deriving instrumental *with* from the verb *use*), Dougherty (1969) (against deriving pronouns from underlying full NPs), Jackendoff (1969) (against deriving quantifiers and negation from higher clauses), and Jackendoff (1972, chap. 3) (against deriving adverbs from related adjectival constructions). These are all arguments against Abstract Syntax, not against Generative Semantics. (pp 453-454)

6.2.1.1. Conclusion

I have thus provided an account of 'raising' verbs which suffers from none of the flaws of the ECM analysis, and which, though utilizing NP-movement, avoids movement to an argument position. One small problem remains, however. Does the structure above violate the ECP? That is, is the trace in subject position properly bound? In this structure the trace in subject position is bound by a trace in [SPEC, VP].[17]

A further consequence of this analysis is the possibility that the analysis of extraction of objects in Barriers which allows for adjunction to VP to escape the VP barrier is actually a case of movement through [SPEC, VP]. Let us review Chomsky's analysis of movement under the

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[17]I return to this data in a later section and consider the case for allowing the NP to move through [SPEC, CP]. Thus treating [SPEC, CP] as a possible A-position (or at least as not incompatible with an A-chain). This analysis avoids the problem of moving across IP and CP in one move. Under our treatment of case assignment, we could not use this redefinition of [SPEC, CP] to motivate a more restricted version of exceptional case-marking as we do not allow the verb to case-mark outside it's maximal projection VP nor within an intervening maximal projection (in this case CP).

barriers analysis and see how this works. Recall first of all that Chomsky puts the following constraint on the possibility of XP adjunction:

> Adjunction is possible only to a maximal projection (hence X'') that is a nonargument. (1986a, p. 6).

By our definition of argument, anything which is theta-marked is an argument. Chomsky then goes on to motivate the possibility of VP adjunction through reference to adjunction to VP at LF under Quantifier-Raising. (Koopman and Sportiche 1982, May 1985). At this point, we encounter two problems in adopting this analysis. (i) In the theory we developed herein, arguments relating to movement at LF are not taken to be proper evidence for movement between D-Structure and S-Structure. This serves as a constraint on theory development, as evidence for movement at LF is very difficult to falsify. (ii) Chomsky must also crucially assume that INFL theta-marks VP, following Fabb 1984. However, if VP is theta-marked by INFL, then it is an argument by our definition of argument and thus cannot allow adjunction. Therefore, we are forced to modify Chomsky's analysis in Barriers as we cannot maintain it and be consistent.

Chomsky then motivates adjunction to VP as a way of avoiding crossing two barriers in the derivation of the fully grammatical example below.

(12) who did $[_{IP}$ John $[_{VP}$ see t]]?

In the above example VP is a barrier to WH-movement inherently, and IP is a barrier by inheritance from VP. Therefore, in order for the analysis to go through, *who* must pass through an intervening position between VP and IP, so that it only crosses one barrier with one move. This position, argues Chomsky, must be created through VP-adjunction.

(13) who did $[_{IP}$ John $[_{VP}$ t' $[_{VP}$ see t]]]?

In the example above, t' antecedent governs t through a revised definition of government:

> α governs β iff α m-commands β and there is no γ, γ a barrier for β, such that γ excludes α (1986a, p. 9)

Further, subjacency must also be redefined in terms of exclusion (ibid p. 30). The definition above depends on a concept of exclusion developed by May (1985), which treats adjunction

structures as single nodes with discontinuous realization. Then domination by a category is defined in terms of domination by all instances of that category. Under that definition, t' in the above example is not dominated by VP as it is not dominated by all instances of VP.[18]

Now, consider this [SPEC, VP] position. If it is to replace VP adjunction as an escape hatch for the VP barrier, it must be similar to [SPEC, CP], which is an escape hatch for the CP barrier. If this is the case, then VP, like IP and CP, is a defective barrier[19], leaving NP as the only inherent barrier. Note, however, that by the Minimality Condition [SPEC, VP] is not directly governed by V, which may be relevant here. At this point, the whole Barriers program begins to look suspect, and may not be relevant in any significant way to the analysis developed here. On the other hand, we could be in the process of deriving syntactic consequences for distinguishing D-Structure argumental specifier positions from those which are non-argumental at D-Structure, and thus sites for movement.

Allowing adjunction to VP is, to some extent, equivalent to saying VP is not a barrier, for it will only act as a true barrier to movement (that is, blocking movement) in some restricted cases. I return to the discussion of Barriers in a later chapter.

In summary, Chomsky must allow adjunction to VP, under a vague definition of 'argument' which does not depend on theta-marking, in order to allow extraction of objects, which should be blocked if VP is an inherent barrier. It would thus seem that the initial definition of barriers was too strong, as extraction from object is, at least in English, relatively

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[18]That is, in some sense t' is a sister to INFL. This provides an interesting contrast to the definition of sisterhood proposed by Chomsky in Barriers. This definition, call it m-sisterhood, treats as sisters any categories which are dominated by the same maximal projection. "a specific notion of "sisterhood" that takes VP to be a sister of the subject of its clause even though I' dominates VP but not the subject. Suppose we say that α and β are sisters (in the relevant sense) if they are dominated by the same lexical projections; this notion is similar but not identical to government." (Barriers, p. 13) Therefore, t' is also a sister to V (and a sister to t) under this definition of sisterhood, even though it isn't inclusively dominated by VP.

[19]That is, according to Chomsky, a 'barrier by inheritance'. A notion that might be profitably dispensed with.

unproblematic. This gives us the contradictory situation where subject extraction, which is generally more limited than object extraction, is predicted to be easier, as it is only potentially blocked by IP and CP, neither of which are inherent barriers to movement, than object extraction, which has the inherent barrier VP to get over. Note further that the adjunction to VP operation is never visible at S-Structure. Though elements may pass through a position of VP adjunction, for various unspecified reasons they can not remain there. If, however, we assume that the intermediate position needed is [SPEC, VP] then we have evidence of this position as a site for movement at S-Structure in those constructions which have been called 'raising to object'.[20]

6.2.2. Equi-verbs

Equi verbs are distinguished from Raising verbs in that they only take non-finite complements.

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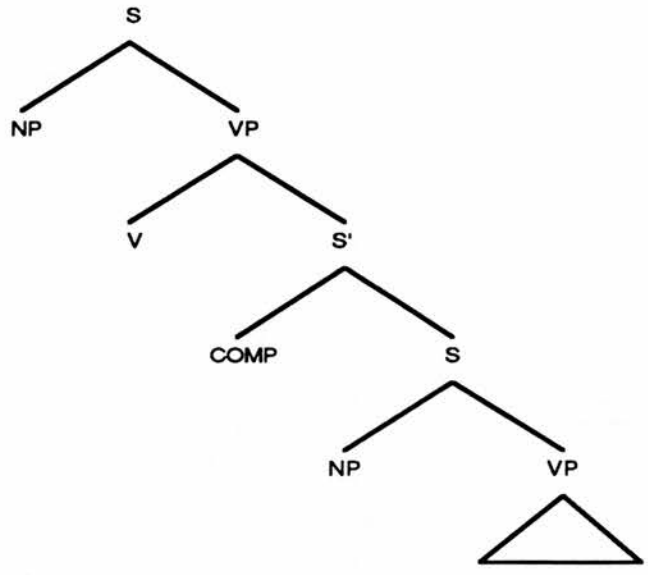
[20]Note, however, that a problem arises with the account of raising to object given above with Cann and Tait's (1990) analysis of the auxiliary system of English. If a modal occurs, then the verb does not raise to INFL. This would predict that the following should be grammatical:

(i) I might him believe to have failed.

If however, we assume the modal *might* to arise in [SPEC, MP] then the verb can move to adjoin to the head of MP. This analysis assumes an empty head of MP, treating the lexically overt modal as a specifier similar to the auxiliary phrase specifiers *have* and *be*. This analysis serves to generalize the analysis of MP across the other super-VP projections such as PerfP and Prog P.



The figure above illustrates the tree configuration for a verb such as *want, expect*, etc. The complementizer, if present, is *for*, and the S' is non-finite. This allows either the surface string *I want for him to go* or *I want him to go* in which the complementizer is omitted. They are called Equi constructions as they can take PRO as a subject of the complement clause, which is then controlled by either the subject or the object of the matrix verb.

(14) I want PRO to go.

(15) *I want for PRO to go.[21]

Equi verbs cannot take a finite complement, and the grammaticality of these constructions in which *for* is overt is the subject of dialectal variation. We will assume that it is possible for a verb in the lexicon to select for a finite versus a non-finite CP. Although strictly speaking finiteness is a property of IP, this feature must in some way be accessible to the dominating CP. The most obvious way for this to come about is through the head of CP. COMP will share major features with its maximal projection, CP. In the case of the complementizer *for* we can assume

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[21]This is grammatical in some dialects of Ozark English and Scots English.

that it is subcategorized for a non-finite IP. Thus Equi verbs select [+for] CPs as complements, whereas raising verbs select a CP unspecified for finiteness (cf GPSG, HPSG). In the case of a raising verb taking a finite CP we can assume that raising to [SPEC, VP] is blocked through the case-assigning requirements of the lower INFL, that is, it must assign NOM case.[22]

6.2.3. Promise and Persuade

Verbs such as *promise* and *persuade* are often called control verbs. They take (in some cases optionally) an object and a sentential complement. If the sentential complement is non-finite, its subject is a PRO controlled by either the matrix subject (*promise*) or object (*persuade*). By analogy with sentences like: *I promised Bill a book.* We can assume that the indirect object is base-generated in [SPEC, VP]. Interestingly enough, no object-control verbs have such a double-object form.

(16) *I persuaded Bill the importance of the exam.

---

[22]Presumably some other NP in the embedded CP could then raise to satisfy the INFL's case-assignment needs, giving sentences such as, *I believe him that she loves t.* from *I believe that he loves her.* This, however, is blocked through a condition requiring unambiguous chains for transmission of theta-roles. If the lower object raises to subject position, it will be moving into an argument position as the subject of *love* is assigned a theta-role, thus that construction is blocked. The problem may however arise in examples like the following, where the lower subject position is not a position of theta-assignment; *I believe that it seems that John loves her.*, yielding **I believe him she seems to love* or *I believe that John was given a book,* yielding *?I believe him a book to be given.* The first 2 examples are again blocked by the Theta-Criterion, the second two are peculiar. There is a sense in which the second is grammatical, with something like a topicalization reading of *him a book to be given.* It is difficult to construct an example with an animate lower subject, due to the properties of ditransitive verbs in English (that is, the direct object is rarely, if ever, animate), thus it is difficult to see the case of the subject, though the intuition is that it is accusative. Compare the following, which illustrate the type of case-assignment. *?I believe that John was given her as a bride. *I believe that John was given she as a bride. ?I believe her in marriage to have been given. *I believe she in marriage to have been given.*

This would have to be the case, as the subject position of a non-finite clause doesn't receive NOM case. This, then, is what blocks movement, as the raised NP won't receive case in that position. *?I believe him for a book to be given.* This is blocked by *for* making IP a barrier through Minimality.

(17) I persuaded Bill of the importance of the exam.

These examples suggest that *of the importance of the exam* is an adjunct of some kind, which does not arise in the structural direct object position, otherwise it would receive accusative case from the verb rather than from the preposition *of*. Alternatively, we might want to analyze *persuade of* as a periphrastic verb listed separately from *persuade* in the lexicon.

The question thus arises whether or not subject and object control verbs occur in different syntactic structures, or whether their different properties arise merely from some form of notation of control in the lexicon.

As we can see from the following data, the complementizer *for* cannot be overt as PRO would be governed in these constructions.

(18) I persuaded Bill PRO to go.

(19) *I persuaded Bill for PRO to go.

(20) I promised Bill PRO to go.

(21) *I promised Bill for PRO to go.

Let's take the case of *promise* first. PRO in the above *promise* examples is controlled by the subject of the main clause, *I*, giving the reading *I promised Bill that I would go*. Thus we treat *promise* as a ditransitive verb, taking either NP ^ CP or NP ^ NP as in the examples above. If the direct object of this verb is a clause, it is either finite, with no control, or non-finite, with subject control. Our previous analysis of raising verbs predicts that we cannot get raising (or exceptional case-marking) on the deep subject.

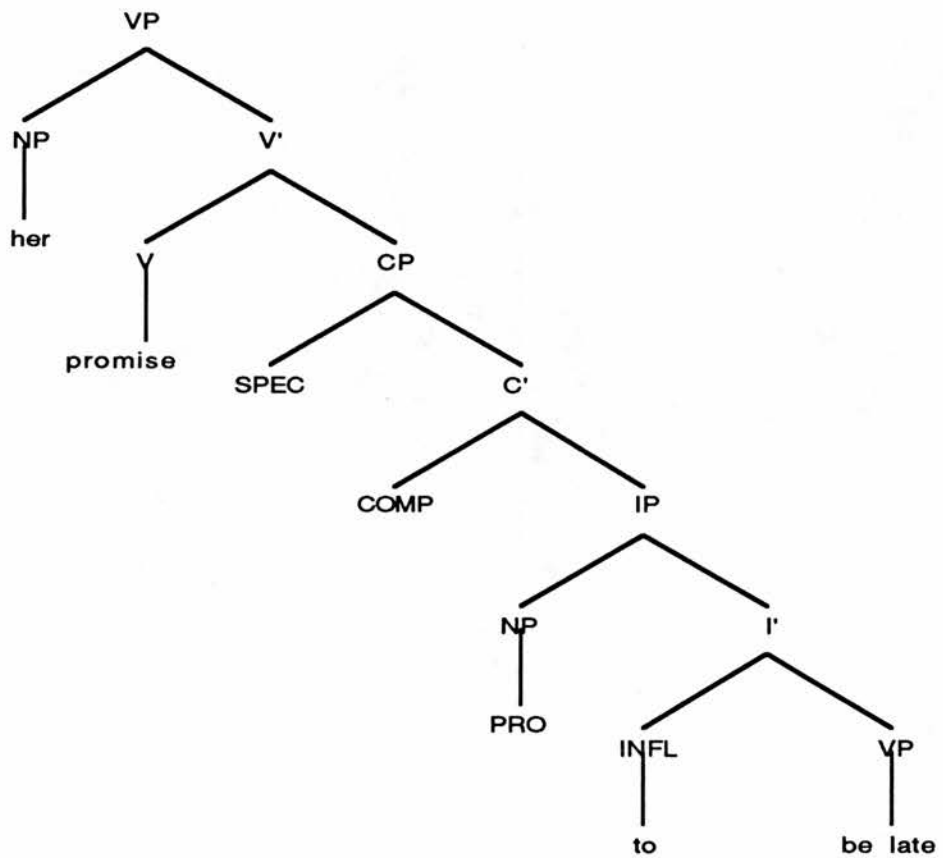
(22) *I promised Bill me to go.

(23) *I promised me Bill to go.

(24) *I promised Bill him to go.

(25) *I promised him Bill to go.

This is true because the indirect object, *Bill*, occupies the [SPEC, VP] position, which is the only place the embedded subject could raise to in order to get case. The ECM analysis must here just stipulate that *promise* is not an ECM verb, and is marked as such in the lexicon. This analysis derives this from the subcategorization frame of *promise*. Thus we assume the following structure for *promise* at D-Structure.



This example illustrates the VP for a sentence such as:

(26) I promised her to be late.

Again, we assume the verb raises to INFL in order to pick up tense, thus giving the correct surface order. PRO here is controlled by the matrix subject.[23] I will return to the issue of how the control of PRO is determined.

Now let us turn to an analysis of the so-called object control verbs such as *persuade*. Remember from above that we saw that *persuade* cannot take two NP complements as *promise* can, but must take a semi-adjunctal PP. Thus we either see *persuade* appearing with a finite or a non-finite complement, leaving aside for the moment the NP ^ PP pattern.

(27) I persuaded Bill that his answer was right.

(28) I persuaded Bill to try again.

The analysis which has generally been assumed for *persuade* mirrors that of *promise* but differs on the control of the embedded PRO subject.

(29) I persuaded Bill [PRO to try again].

However, consider the following, suppose we treat *persuade* as a raising verb, and thus base-generate it with either a CP direct object, or an NP indirect object and a CP direct object. In the first case, the CP must be non-finite, otherwise sentences such as the following would result:

(30) *I persuaded that his answer was right.

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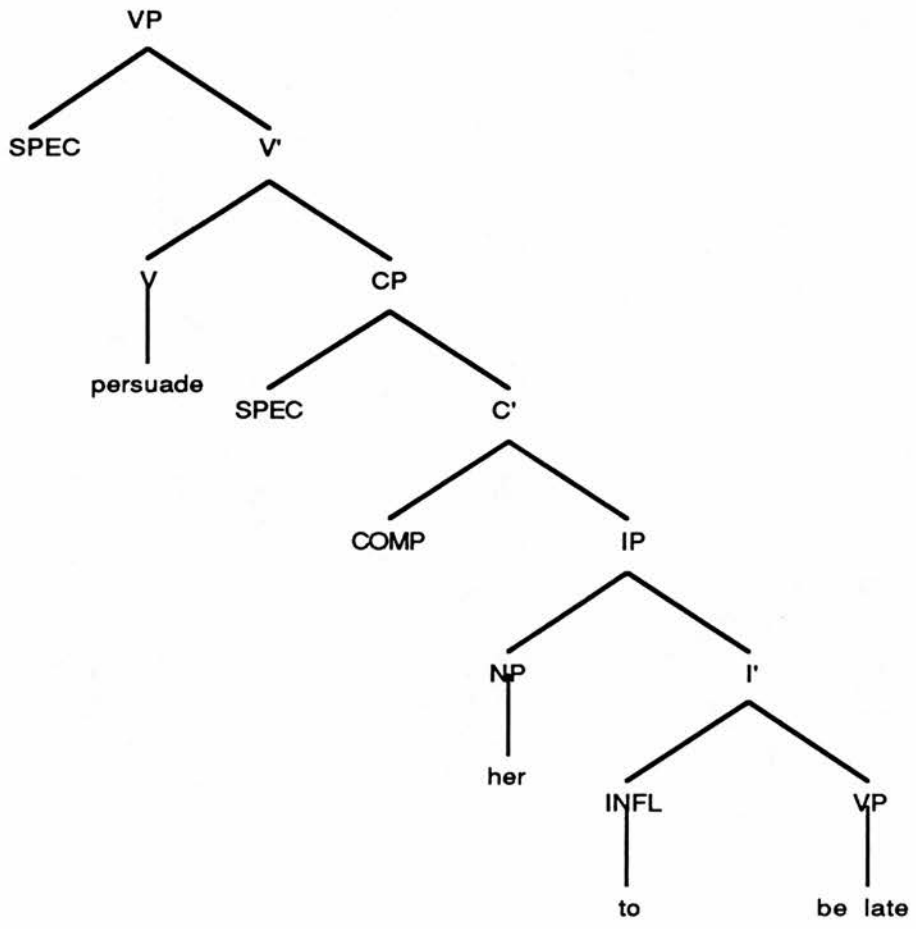
[23]I will not here go into those few cases where *promise* seems to display object control, as in:

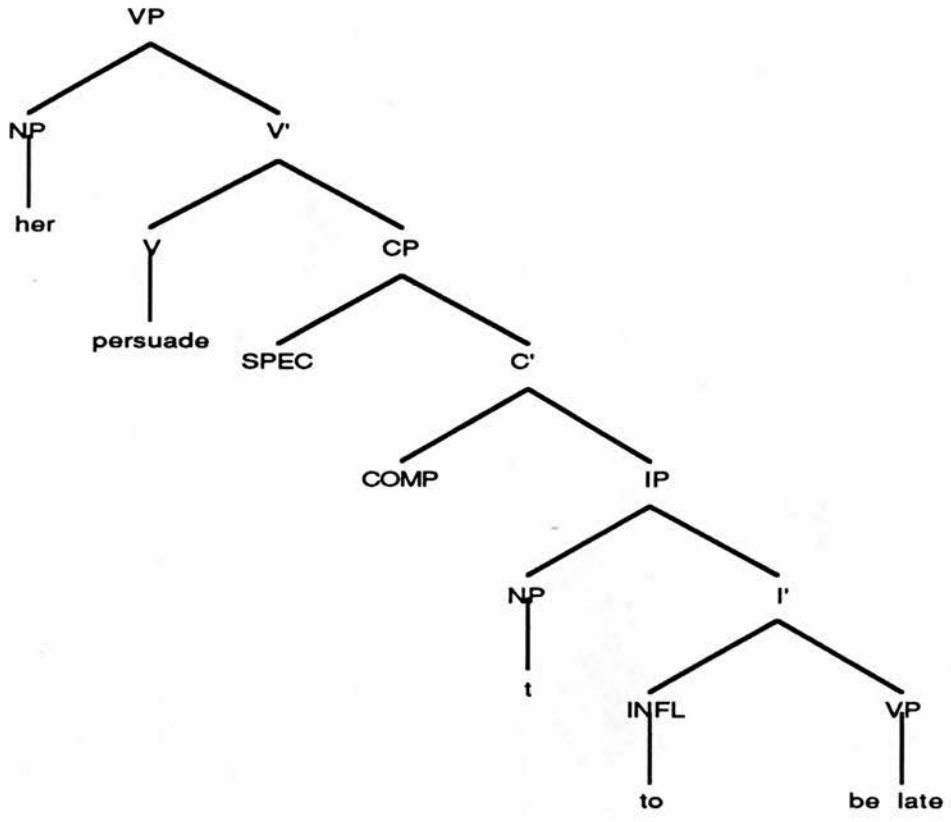
(i) I promised her to be allowed to leave.

(ii) I promised her to be able to leave.

This sentence is ungrammatical as one of the theta-roles of the verb remains unassigned, that is, the recipient of the act of persuasion. We must thus allow the subject of the lower clause to raise to the [SPEC, VP] position in order to receive that theta-role. I will return shortly to the problems this analysis raises, let us first look at the other case, where the verb takes an NP and a CP as complements. In this case, the CP must be finite, as the subject of the CP must be assigned case and it cannot raise to [SPEC, VP] to accomplish this as it is occupied by the indirect object NP. The following tree illustrates the proposed DS representation for the first case.



The surface structure is then derived by the same NP-movement as in the case of the raising verbs discussed earlier, giving the following S-Structure representation. Note here that *persuade* differs from *promise* in having an NP-trace bound by the object, not a PRO, in subject position.



The problems this analysis raises are two-fold, syntactic and semantic: (i) It violates the Theta-Criterion by allowing the embedded subject to receive a theta-role from the embedded verb, then to move to a theta-marked argument position, a violation in itself, in order to receive another theta-role from the matrix verb. Thus in terms of the syntactic theory we must both allow double-theta-role-assignment, and movement to true argument positions, that is, argument positions that are actually assigned a theta-role. However there is evidence from other constructions, such as free relatives, that such double-theta-role assignment must be allowed.[24] As to the improper movement, however, less can be said in its defense. (ii) The

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[24]Also from the analysis of passive given in section Chapter Five which utilizes the sentential theta-role TOPIC. Further, an analysis of relatives such as *I know the man Bill likes t* must also allow double theta-role assignment to 'the man' under an analysis constrained by the

major semantic objection is that intuitively *persuade* always takes a persuadee and a fact to be persuaded of. It is then further felt that this semantic constituency should be reflected at D-Structure. However, we have been treating D-Structure as a pure representation of lexical properties, not semantic properties. Providing the right structure is input to LF, the D-Structure representation should not matter.

6.2.4. Specifier Positions Revisited

We have considered evidence for treating some specifier positions as variable between landing sites and positions of theta-role assignment. We have established that [SPEC, CP] is never a position of theta-role assignment, and is thus always a Theta-bar position and a landing site. The position with respect to the lexical categories is somewhat different. We have developed an analysis which suggests that [SPEC, VP] is often a site of theta-role assignment, and that when it is filled by an argument, cannot be used as a landing site. We have not yet clearly established whether or not this use of [SPEC, VP] nullifies the need for VP adjunction in the Barriers framework. At first glance, it would appear to produce too great a limitation on movement, as any VP headed by a ditransitive verb would be an island to extraction.[25] A prediction which is readily disproved by the data. Some linguists have proposed that [SPEC, AspectP] and [SPEC, TenseP] are potential movement sites (Carstens & Kinyalolo 1989). These specifier positions are a special case of specifiers of lexical items, as they are specifiers of affixal categories.[26] Sportiche (1989) goes further both in treating [SPEC, NP] as a possible landing site for movement, and in finally claiming that every specifier position except [SPEC, CP] is an A-position, and thus a possible movement site for NP-movement. Guilfoyle, Hung & Travis (1989) propose the possibility of [SPEC, IP] and [SPEC, VP] both being filled at D-

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PFLP, which does not allow for empty operators binding empty categories, as the conventional analysis of such structures requires. I return to this data in the next chapter.

[25]Though only in case we assume that VP is an inherent barrier.

[26]This specifier position in the Verb Raising analysis of Cann & Tait 1990 is treated as a position of subcategorization for the verb, along the lines of Pollock's analysis of NegP. If this is the case, this sort of specifier position may not be available for movement.

Structure by "subject" like arguments in four Malayo-Polynesian languages. They claim that [SPEC, IP] is a non-theta-marked position associated with the Topic,[27] and thus is relevant to the facts of extraction and quantification, and that [SPEC, VP] is the position to which the verb assigns the Agent theta-role, and can thus in some languages be associated with binding and control properties. Various linguists have proposed treating [SPEC, VP] as the underlying subject position (the "Clausal Integrity Hypothesis"), with subject raising operating to move the subject NP to [SPEC, IP], presumably in order to receive case (Koopman & Sportiche 1987, Ruyter ??). Larson (1988) alters this somewhat to base-generate the subject in a position adjoined to VP. Williams (1990) provides arguments against these analyses and in favor of an analysis utilizing NP-Structure, a level at which Theta-Role Assignment and Predication are established (Van Riemsdijk & Williams 1981). Excluding the analysis of specifier positions of sub-lexical (affixal) categories, though, we will assume with Sportiche (1989) that all specifier positions save [SPEC, CP] are positions of potential theta-role assignment, or in the absence of theta-role assignment, they are potential landing sites. The Theta-Criterion blocks them having both manifestations in one representation. This suggests that INFL is not properly considered as a strictly non-lexical category. If this is true, we might want to reconsider whether it is given universal projection properties. I consider in a later chapter whether INFL is best considered as TenseP, and in that instance is a projection of a lexical category, or whether it is better considered as [+/-] FiniteP. Thus we have arrived at a Minimalist typology of specifier positions which distinguishes those specifier positions filled at D-Structure by categories governed by the head, and those specifier positions unfilled at D-Structure which are available as landing sites at S-Structure. What sort of specifier position arises in an XP results from the lexical properties of X.

6.3. *The Tree becomes more abstract*

One of the difficulties of adjusting to recent changes in syntactic theory lies in the interpretation of tree diagrams. Tree diagrams in transformational grammar were reified objects which underwent operations such as pruning, etc. Structure-preserving constraints held,

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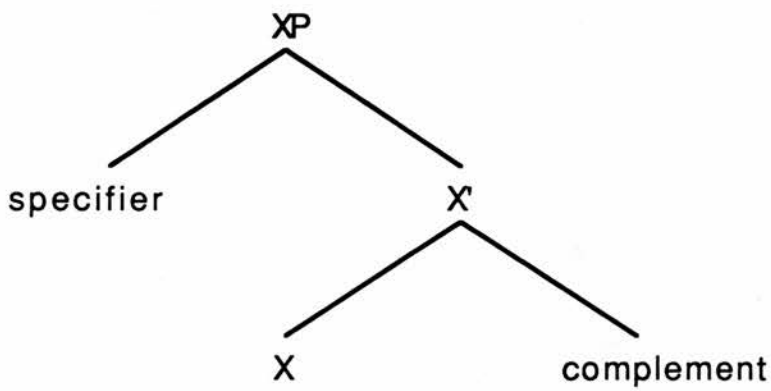
[27]This is similar to Tait & Cann's (1990) treatment of [SPEC, IP] in Italian.

but structure could be built to a great extent, and transformations could insert or delete specific lexical items if their structural descriptions were met. With the introduction of Move-alpha and the Barriers tree, however, tree representations have become much more abstract, and could be better interpreted as a template for potential syntactic structure, rather than as the structure itself. Tree structures are required at the level of abstract syntactic representation to account for structural dependency relations between items or positions in the tree. However, Barriers-style trees with many empty nodes shouldn't be viewed as complicated trees, but as statements of dependency between items in the string represented.

Under this interpretation of tree structure, the deep structure tree can be considered as a structured unification of the lexical properties of the elements of the string. That is, projection from the lexicon of the syntactic and argumental information of a lexical item is fitted into the template provided by the X-bar Syntax, that is, the potential tree for that language. The apparent complexity of trees with multiple empty nodes must then be set against the fact that this sort of tree is roughly the same for every sentence, that is, it provides the templatic description of what is a well-formed string of the language. The tree may be complex, but seen from the point of view of the grammar as a whole, the existence of one complex tree for the deep structure representation of many (if not all) sentences is much less complicated than a conception of a grammar which allows for the possibility of a different tree represenation for each sentence, particularly given a general algorithm for extracting the templatic tree from the vocabulary of the language under acquisition. Given that a grammar must generate infinitely many sentences, the grammar must then also generate a large class of tree representations for those sentences. Viewed from the issue of learnability, this issue is even clearer. If tree diagrams correspond to something 'in the head' of the learner, then it can just be an artifact of our notation system that they appear so complex, and as is generally recognized about language, the internalized grammar must be supported by an innate predisposition towards language learning, as well as some Language-specific cognitive capacities. The cognitive construct which linguists use trees to notate need not be of equivalent complexity with a system of cognition, just as representations of the objects manipulated by a theory of vision yields constructs much more complicated than the naive analyst would like to manipulate in a theoretical representation.

Chapter 7. The Phonetic Form Licensing Principle, Learnability, and Universal Grammar

As discussed in a previous chapter, one of the strengths of the Barriers tree comes in its universality. If the tree, however deep, provides a template for every well-formed string of a language, then its apparent complexity is paid for by its ubiquitousness. If, further, the template structure arising from X-bar of the familiar form:



is universal, then the deep templatic tree for a particular language can be inferred by the learner from the fully lexical words which project, and the sufficiently paradigmatic morphemes which also project. For a given sentence, the PF-Licensing Principle will license only those possible underlying structural representations which meet its strict interpretation. However, various proposals have been made which could serve to vitiate this advance in simplification of tree structure under certain interpretations. One such proposal is that of Speas (1991) which allows maximal projections to have multiple specifier positions. Other possible sources of confusion have arisen with regard to the interpretation of adjunctions to maximal projections. Depending on the definition, it is possible to allow items appearing adjoined to VP to be considered to be within the government domain of V, although they are also considered to be outside the barrier created by VP. If both multiple SPEC positions and adjunction positions are available to Universal Grammar, the learner must be able to deduce from the data given whether both options are possible in the language being learned and if this is so, which possibilities are available for which constructions. This potential for confusion should be defused by there being radically different syntactic properties associated with each structure,

otherwise there will be no empirical difference between the two, and they should, in essence, be unlearnable save as a gray area between heads and complements.

7.1. How does the learner determine what projects?

One of two possibilities exists with respect to this question. Either all languages draw from a universally given set of possible syntactic projectors, the data for each language then being sufficient to choose between the possibilities, or the same projections hold for all languages. The research reported herein favors the first approach, using the PF-Licensing Principle as the mechanism by which the learner deduces the syntactic categories (along with some notion of paradigmatic licensing). The other possibility should be quite easy to discard. One has only to look at the proposals put forward for various languages since Pollock (1989) and to imagine an account which integrated them all into one great universal tree.[1] For example, Carstens & Kinyalolo (1989) propose that universally IP breaks down into two phrases, T(ense)P and A(spect)P. Whitman (1989) proposes the existence of a multiplicity of Agreement Phrases, each having separate manifestations for gender and person, to cope with the multiple discontinuous agreement demonstrated by Choctaw. The Bantu languages considered by Carstens & Kinyalolo (hence C&K) also display multiple agreement marking on the verb (and on nominal modifiers) but this is treated in their analysis through feature-passing. This difference in analyses raises another issue important to this research program: Do all languages manifest and grammatically support Agreement (and other processes) in the same way? Is there any empirical way to decide between opposing accounts? In defense of their

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[1]Although I do not have much hope for this approach, it is possible to interpret the PFLP, along with the interpretation of barriers as requiring lexical heads to instantiate them, and the principle developed in Chomsky (1988) which allows for the deletion of unnecessary elements at LF, as yielding the same tree with the same projections for every language. In such a representation, however, certain heads with their attendant projections would never interact syntactically or semantically (or phonetically of course) in any string in the language. They would be syntactically inert. However, even if this interpretation is logically equivalent to the interpretation adopted in the text, reasons of economy of representation on the part of linguists drawing trees on bits of paper militate against its general adoption. If in some sense those completely dysfunctional projections are there, it is for the best to suppress them for simplicity's sake. The counterevidence one would look for to this would be evidence of a choice point for languages, i.e., either this projects or that, but not both.

analysis, C & K claim that in analyzing the following sentence, the system proposed in Chomsky (1988) would require:

> 1 projection of DA (Det Agr), 2 of SA (Subject Agr), 1 of OA (Object Agr), 1 of CA (Comp Agr) and 1 of NA (Noun Agr), vastly complicating the representation.

(1) U-ni-letee vitabu amba-vyo yu-le mwanafunzi m-refu

you-me-bring 8-book COMP-8CA 1agr-that 1student 1agr-tall

a-li-kuwa a-ki-vi-soma.

1SA-pst-be 1SA-contin-8OA-read

Bring me the books which that tall student was reading.

If, however, AGR does not project syntactically in a language with as rich agreement as the Bantu languages, why should it project in any language? What C & K do not establish is whether the agreement they are considering in the above example must all be handled by the same mechanism.[2] This does raise the question, however, of how agreement should be treated, and whether or not it is sensible to treat it in the same manner involving syntactic projections. As long as what is projecting are elements of tense and aspect, or other items associated with predicates, it can still be argued that the extension of the tree projection from VP to IP (or whatever phrasal node is the sister to COMP) still comprises a VP, however embellished. When Agreement Phrases enter the picture, then the ability to consider this part of the spine of the tree as an articulated VP is compromised. Further, the question, raised earlier, of whether all agreement is to be treated in the same way, is paired with the question of whether

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[2]As appears for example, in the distinction between government and agreement in traditional grammar. It might be more reasonable to treat the pro-drop licensing agreement on the verb as the reflection of a syntactically projected AGR, but treat the governed agreement on the noun complements as a case of SPEC-head agreement, or feature-passing of some kind within the argumental NP.

agreement treated by allowing AGR to project shouldn't be distinguished from non-projecting AGR by certain associated syntactic properties, such as null anaphora being available for the argument projecting. If two (or more) different mechanisms for agreement are available universally, the method the learner uses for determining which holds in his or her language should be relatively straight-forward, and shouldn't require the learner to have access to competing analyses of the grammar, in order to decide which is the most elegant.

7.1.1. The Problem of the Negation Phrase

So far we have considered the differences in positing syntactic projections for those things associated with the verbal system, such as tense and aspect, and those things associated with agreement and thus with arguments and the nominal system. However, there exists a third element which has been given the possibility of entering into the syntactic tree which is not necessarily so closely associated with either. This is negation.

Pollock addresses part of this question in a footnote:

> Naturally, the idea that there is a NegP in English and Romance does not commit me to the view that there is one universally: languages could differ precisely in that some could have a NegP and others could have a purely adverbial Neg. Perhaps Scandinavian languages are of the latter type. In other languages Neg might be a specifier of Tense. Many other typological variations concerning the status of Neg readily come to mind. (1990 fn 50,p. 421)

But what Pollock never addresses in his paper is how such representations can be learned. If these various sorts of negation are available to Universal Grammar, and if they have no strict semantic correlations, how does the learner determine which case holds in their language? Let us assume for the sake of argument that the possibility of syntactic projection for sub-verbal elements (tense and aspect) depends upon (i) full paradigmatic expression on the verb, and (ii) syntactic consequences of a noticeable nature, such as word order constraints, associated free morphemes, etc. Assume further that the possibility for determining a syntactic projection for agreement morphemes depends upon (i) full paradigmatic expression on the verb or auxiliary, and (ii) associated syntactic consequences, such as null anaphora. What, then, can be the determining factors for positing a projection of negation? In the case of French, a syntactic consequence in the shape of a free associated morpheme, *pas*, exists, along with certain robust word order effects well described in Pollock (1989). In certain other languages, negation may

have full paradigmatic expression on the verb, thus also licensing a negation projection. In English, however, negation has less syntactic consequences than in French, and thus it is harder to argue for a full mainline[3] NegP projection.[4]

7.1.2. COMP and INFL as Elements of Universal Grammar

An account which relies on 'full paradigmatic representation' of lexical items in order to license their syntactic projection must still deal with the question of determining the projection of COMP and INFL[5], or, to put it more theory neutrally, sentence and clause. Out of the categories considered by Government Binding theory, COMP and INFL have been traditionally distinguished from the lexical categories (noun, verb, adjective, preposition) as non-lexical. This difference enters into the grammar at various points, for example, non-lexical categories (such as COMP and INFL) cannot be proper governors and are not considered to display properties of sub-categorization, or theta-marking. Certain COMPs arguably do have selection properties, for example *for* selects a non-finite IP. However, no selection properties have been proposed to hold between the non-lexical categories and the lexical categories. The major area of interaction between the non-lexical and the lexical categories has been, for English, the subject position, or [SPEC, IP]. [SPEC, CP] provides the landing site for WH-phrases in questions.[6] In Barriers, Chomsky treats neither CP nor IP as inherent barriers, but considers the two, together, as a barrier to extraction from the [SPEC, IP] position. IP can also, however,

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[3]By 'mainline' I refer to a syntactic projection which intervenes between the projection of V and the projection of COMP.

[4]The phenomenon of 'adverbial negation' referred to by Pollock appears in the analysis of English auxiliary structure of Cann and Tait (1990).

[5]I avoid the issue of whether what has traditionally been called INFL is now better treated as a projection of Tense or Finiteness. By INFL here I refer to the head of the phrasal node selected by COMP.

[6]Earlier in this thesis I examined the possibility of treating [SPEC, IP] as a universal 'topic' position.

inherit barrierhood from VP.[7] A three-way distinction, then, is developing between non-lexical categories, lexical categories, and sub-lexical categories (affixes). All project into the syntax, with syntactic consequences, but are subject to certain differences in the application of constraints, or to differences in structure, depending upon their varying status.

The question of learnability must then be asked with respect to these non-lexical categories. If we assume that sub-lexical categories are licensed in two ways; paradigmatically and syntactically, and that lexical categories are also licensed in two ways; syntactically (i.e., the ability to take arguments, with syntactic consequences of case-assignment, theta-marking, etc., and word order effects) and semantically (roughly, to correspond with either a referential item or a predicate), then how are the non-lexical categories to be licensed? We can note further in approaching this question that although languages have been shown to have tremendous variation in choice of lexical and sub-lexical item, the same is not the case for the non-lexical categories COMP and INFL.[8] It may further be noted that while the universality of noun and verb as lexical categories can be questioned in certain languages, the universality of clause and sentence as units of human language appears to be basic.[9] From these points, then, it could be assumed that COMP and INFL are projected syntactically as part of Universal Grammar, and

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[7]Little has been done, thus far, to systematically consider the concept of 'barrier' given the possibility of general syntactic projection of morpheme categories. Unless these intervening phrases can be shown to lexically mark (L-mark) their complements, they will introduce many new barriers to the tree. Even if the complements are L-marked, they may still be considered to constitute barriers under the minimality condition. The concept of relativized minimality may come in useful here, but will have to be very narrowly construed. I return to this issue later in the next chapter.

[8]The only exception lies in the positing of the existence of syncretized categories. The properties to be associated with the existence of syncretized categories are as yet to be fully established, and pose an interesting direction for research. Tait and Cann (1990) suggest that Tense and Agreement have syncretized in English, thus explaining the impossibility of null subjects. The evidence for this kind of syncretization is of the strongest sort, it is impossible to separate out tense and agreement affixal morphemes, and the paradigm that is left is minimal. The evidence for positing syncretized syntactic projections of items which are always morphologically distinct must be more tenuous. I return to this issue later.

[9]The universal availability of categories corresponding to Argument and Predicate is uncontroversial. These are roughly the semantic functions encoded by the [+/- N] and [+/-V] feature notation for the underspecified categories in the lexical entries.

thus do not have to be learned. According to the criteria for learnability which we have been considering, it is doubtful whether they could be inferred from the data. We will assume for the time being, however, that the individual properties of COMP and INFL in various languages are learned, as are the specific lexical items. Thus they can still be a locus for parametric variation. In other words, their specific properties can vary from language to language, but their existence as the head of a syntactic projection is universal.[10]

7.1.3. Parametric Variation Arises from the Differing Properties of Lexical Items.

Speas (1991) identifies three potential sources of cross-linguistic variation: Lexical Variation, Parameterization of Principles, and Application at Different Levels. Of these three, the first is perhaps the most straightforward to imagine from the perspective of language learning. Clearly, much of the effort of acquiring a language rests in the acquisition of the lexical items involved. These lexical items may have certain idiosyncratic properties associated with them, and will also have certain properties qua their membership in a major class of words in a particular language, e.g., nouns requiring overt case endings in Latin but not in Lakhota, determiners requiring a noun complement in English but not in Warlpiri. The learner has ready access to data including these lexical items and demonstrating their properties.

The notion of Parameterization of Principles, is, however, somewhat less straightforward. It relies on a much greater notion of innate knowledge, as the learner must be preset to attend to certain types of data in order to set a Parameter, and must also have the various settings of the Parameter available in Universal Grammar, along with their consequences (though these may

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[10]It may be the case that the PFLP need not be invoked in the acquisition of COMP and INFL, but that it applies to projections of COMP and INFL in particular tree structures. On the other hand, it may be possible to adopt the strong form of the PFLP which assumes that all syntactic heads must be PF-licensed. This would predict that the local trees projected from COMP or INFL are only present when they are PF-licensed. For example, perhaps PRO can only exist when it is licensed by *to* in INFL, and thus doesn't appear in *-ing* nominals, or in complements of verbs which take bare infinitive complements. This would have the effect of forcing movement to [SPEC, CP] in questions, or to COMP in yes-no questions in languages without overt question particles, otherwise, the CP projection is not licensed. If we assume that declarative sentences can be IP, but that questions must be CP, then this analysis holds.

in part follow from general principles). Several parameters have been proposed, these include the Directionality of Headedness, the Null Subject Parameter and the Configurationality Parameter. The first of these, Directionality of Headedness, would appear to be a fairly simple parameter operating on the X-bar theory module of the grammar, determining word order between sister constituents. However, the data indicates that rarely is a language univalued with respect to this Parameter, rather Directionality of Headedness appears to change relative to the relationship involved, as in English the verb is more or less initial within the VP, whereas the noun is more or less final within the NP. The basic tree structure for English illustrates this as well, at the level where the X' element is head, it tends to be final, whereas down one level where the X^0 element is head, it tends to be initial. Some linguists have suggested that this apparent directionality of headedness is not itself axiomatic, but follows from other principles of grammar, such as the direction of case assignment.[11] The evidence for the other proposed parameters is also somewhat indirect and is dependent on a large innate component.

The third locus of variation, Application at Different Levels, is also somewhat less directly demonstrated than the first. According to this notion, some rules may themselves be universal, such as WH-movement, but the level of syntactic representation at which they occur may differ. So for example, in Chinese and Lakhota WH-movement applies between S-Structure and LF, and not between D-Structure and S-Structure. In English, WH-movement has visibly applied at S-Structure. The problem with this type of variation is that it too relies to a great extent on innate knowledge. In this case, that WH-movement is a universal rule, and must be applied somewhere. Thus the child learning Lakhota will have, as a syntactic component of Universal Grammar, the knowledge that WH-words raise at some level of syntactic representation. If no movement is apparent at S-Structure, then this movement must still occur at LF. Against this view, it could be argued that in this case WH-movement is not a rule of syntax, but rather a constraint on semantic representations. If LF itself is not a level of semantic

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[11]Similar to earlier proposals in GPSG in which the tree structure was factored into two different types of information, dominance and precedence, linguists working in GB have proposed that the tree itself is unordered with respect to sisterhood, but that linear order is imposed at PF (or perhaps earlier in some cases) based on various factors, including direction of case and theta assignment, sentential stress patterns, cliticization, etc.

representation, but is the syntactic input to a semantic representation, it could be the case that this WH-movement occurs in Lakhota or Chinese, not at the level of LF, but at some further semantic level. In other words, the evidence that WH-movement exists as a universal SYNTACTIC rule is somewhat insubstantial.[12]

Borer (1983) proposed that all parametric variation has its source in the properties of individual lexical items. This proposal has been called the Lexical Parameterization Hypothesis by Manzini and Wexler (1987):

> LEXICAL PARAMETERIZATION HYPOTHESIS: Values of a parameter are associated not with particular grammars but with particular lexical items.

Thus, all parametric variation is seen to have its origin in the differing properties of specific lexical items (and classes of lexical items). This proposal has the virtue of providing a strong constraint on learnability, restricting the amount of information that can be assumed to be innate. Speas (1991) provides further support for this claim.

7.2. *The PF-Licensing Principle*

The Phonetic Form Licensing Principle (PFLP) was first identified within the free relative clause data considered by Cann and Tait (1989). This Principle constrains tree structures in that syntactic projections are only licensed if they conform to the PFLP. This requires there to be

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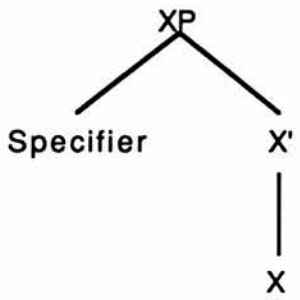
[12]A more restricted theory of Grammar would not, however, be committed to claiming that WH-movement was a syntactic rule in some language (such as English) but was a semantic rule (similar to Quantifier Raising) in other languages like Lakhota. A more plausible view would be that in languages with syntactically transparent WH-movement, this movement is unrelated to the semantic rule but arises through other general syntactic processes. For example, the proposal that there is an phonetically null [+WH] morpheme in COMP in questions in English which "attracts" the WH-word for purposes of affixation. Or it could be proposed that the PFLP requires a question to be headed by a licensed CP in order to be identified as a question, where licensing would arise either through verb movement to COMP (yes-no questions) or through WH-movement to [SPEC, CP] (WH-questions). The rule raising WH-elements at a level of semantic representation would then arise through completely different mechanisms. A third alternative is to relate syntactic WH-movement to focus constructions syntactically.

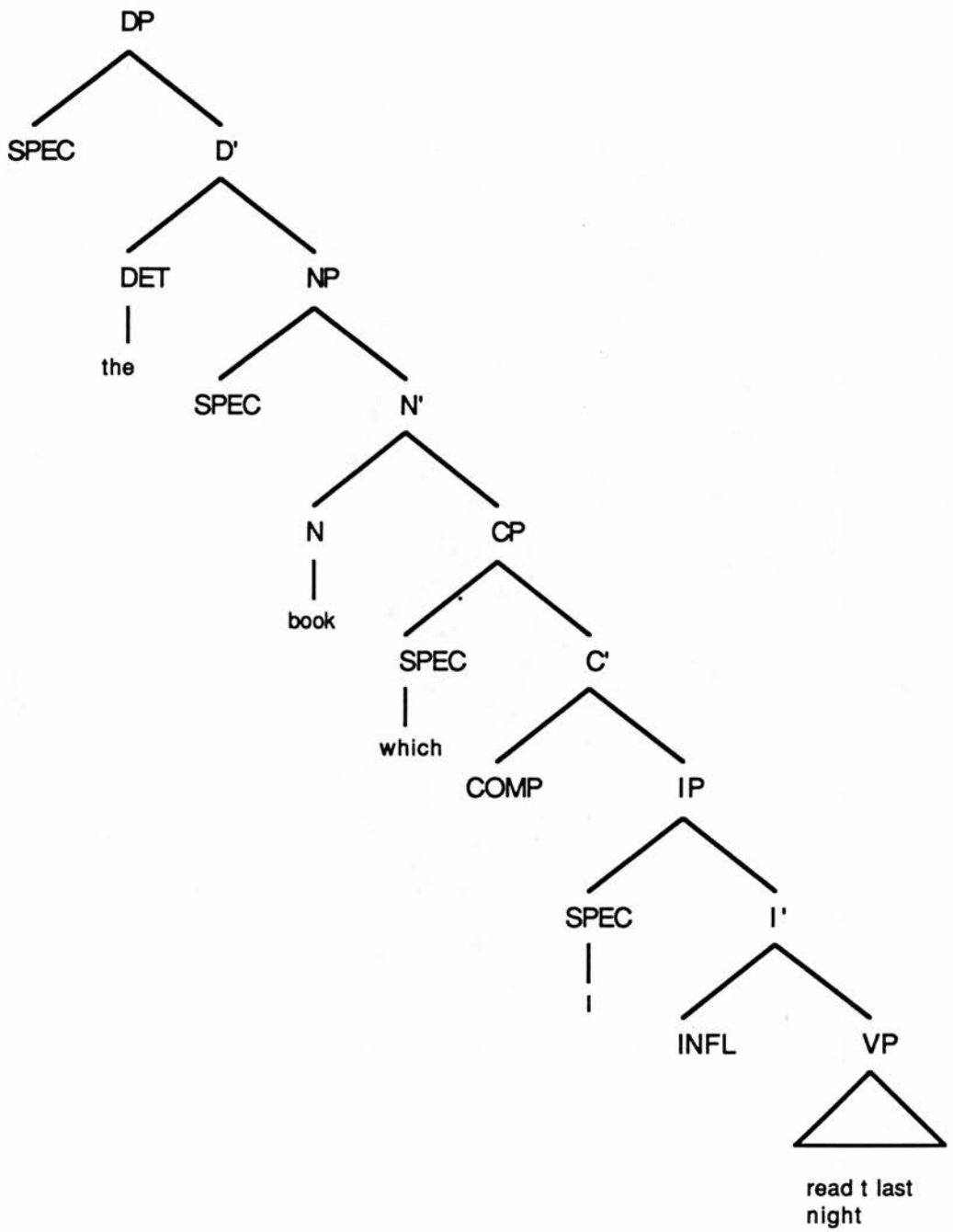
phonetically visible material either associated with the head position, or the specifier position coindexed with the head position of any syntactic projection structure.



The PF-Licensing Principle, combined with an interpretation of phrase structure trees as arising from the application of the appropriate operations on lexical items (for example, the familiar X-bar projection algorithm roughly illustrated in the figure above), serves to locate parametric variation firmly in the differing properties of lexical items. When learning a language, the child learns lexical entries, including morphemes and their associated lexical properties. Assuming the projection operations are part of Universal Grammar and are thus available to the learner, the PFLP then acts to ensure that all the information necessary to the learner in determining syntactic structure is present in the lexicon, for every possible sentence in the language.

7.2.1. Variation in Relative Clauses and the PF-Licensing Principle

In order to consider in some detail the operation of the PFLP, let us consider the analysis of headless relatives in English, and then consider the variation possible in relative clause structures in the languages of the world. Relative clauses present an interesting set of data, particularly in the non-headed variety. In these cases, we see the deep relationship between noun phrases and clauses, both in structural similarities and in semantic denotation. Relative clauses in English pattern like other complex noun phrases in resulting in islands to extraction. We will assume the following structure for headed relatives in English.



Here the island effect of the relative clause results from its not being L-selected by the head noun. However, a coindexing relationship arises between the head noun and the [SPEC, CP]

position which provides the basis for the coreferentiality assignment between the head noun and the relativized NP within the relative clause.[13]

7.2.1.1. The PF Licensing Principle and Headless Relatives

In English, another form of relative clauses exists, which differs in an interesting way from the headed relative discussed above. In this variation, there is no external head to the relative clause, thus is it often referred to as a "Headless Relative" or a "Free Relative".

(2) I'll buy [what you buy].

(3) [Where John used to live] is very beautiful.

There is also a form of free relative that takes a relative pronoun with *-ever* suffixed. In this case, the relative clause receives a universal quantification reading, rather than a referential reading.

(4) I'll buy [whatever you buy].

(5) [Wherever John lives] is always very beautiful.

These *-ever* free relatives have the same distribution as referential free relatives, though there are aspect effects with both the matrix verb, and the verb internal to the relative clause. Various proposals have been put forward for the internal structure of these free relatives. The principal question they address is the location of the relative pronoun at D-Structure. Some researchers have provided arguments for locating the relative pronoun in the head position of the NP containing the relative clause (Bresnan and Grimshaw 1978, Larson 1987). Other linguists have provided evidence for base generating the relative pronoun within the relative clause, and then moving it to COMP, thus giving it a treatment identical to that of headed

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[13]I will be assuming the DP analysis throughout, as part of a general position on the projection of all lexical categories. To some extent, this analysis is required by the PFLP in the strong interpretation which holds that if a category is PF-licensed, that is, contains lexical material, then it projects into the syntax. This stronger form of the PFLP requires the additional definition of paradigm licensing as a subclause.

relative clauses (Groos and van Riemsdijk 1979, Horvath and Grosu (1988). The evidence in favor of locating the relative pronoun in the head position of the containing NP (hence the Head Hypothesis, HH) consists of various matching effects found between the containing NP and the contained relative clause. The category of the relativized item must be the same as the category containing the relative clause. Consider the following examples from Bresnan and Grimshaw (1978):

(6) I'll word my letter [$_{AP}$ [$_{AP}$ however] you word yours].

(7) I'll put my books [$_{XP}$ [$_{XP}$ wherever] you put yours].

(8) I'll reach [whatever height my mother did].

(9) I'll grow [however tall my mother grew].

(10) *I'll reach [however tall my mother grew].

(11) *I'll grow [whatever height my mother did].

Further matching effects are found in languages which demonstrate more morphological case marking than English, such as German. Consider these examples from Groos and van Riemsdijk (1979):

(12) Ich nehme, wen du mir empfiehlst.

I take who-ACC you me-DAT recommend.

I take who you recommend to me.

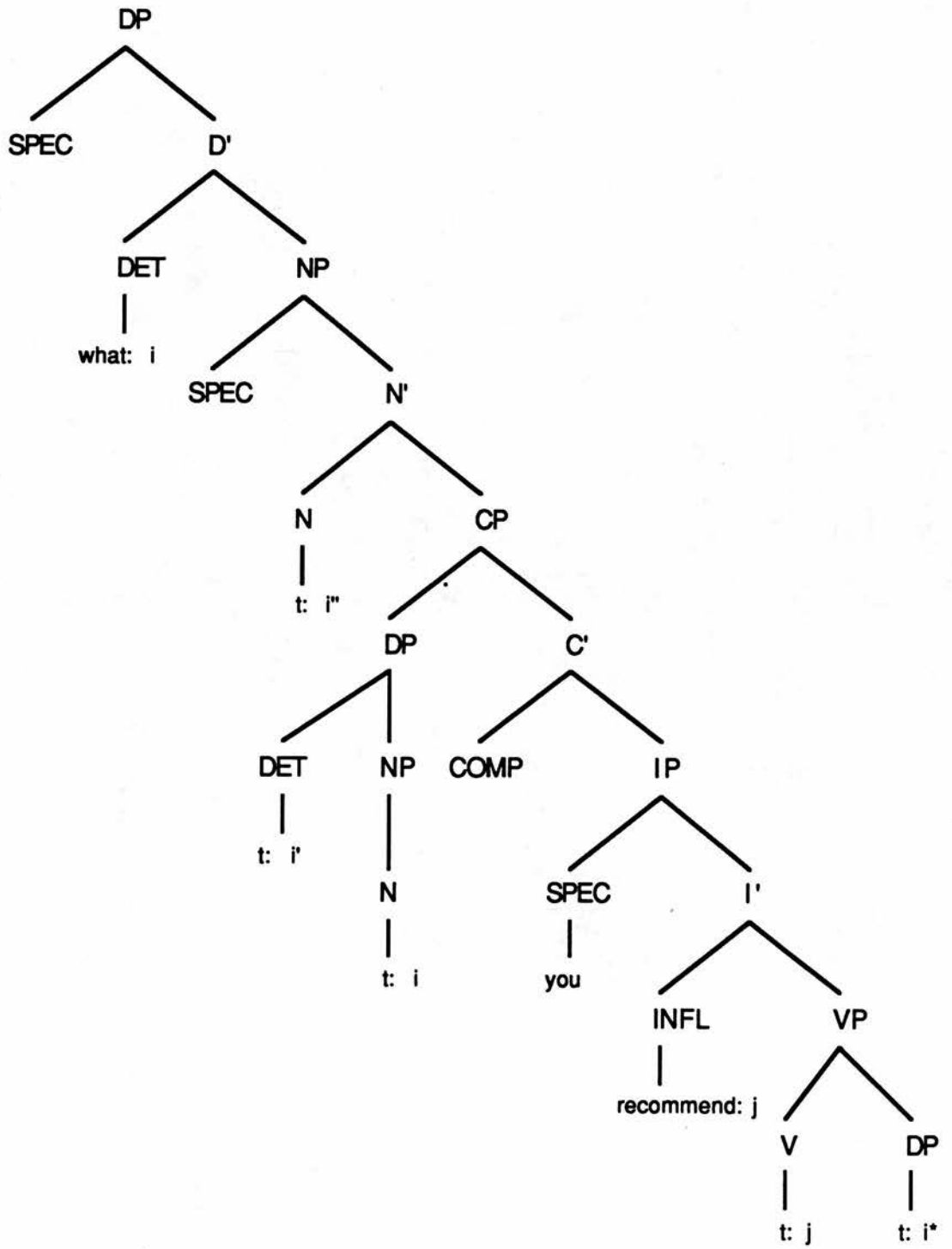
(13) *Ich nehme, wem/wen du vertraust.

who-DAT/ACC trust

The COMP hypothesis, however, also has evidence in favor of it. To a large part, this evidence derives from the fact that free relatives share many of the characteristics of headed relatives, a fact that is mysterious if no WH-movement takes place. Free relatives obey WH and CNP constraints, the *that*-trace filter, and the doubly-filled COMP filter. Further, some

languages do allow non-matching in terms of case marking (Classical Greek, (Hirschbuhler 1978), Catalan (Hirschbuhler and Rivero 1983), and Rumanian (Horvath and Grosu 1988). Extraposition evidence from Dutch also supports the analysis in which the relative pronoun is within the relative clause (Groos and van Riemsdijk 1979).

Thus, both the head and the COMP hypothesis have certain evidence in favor of them, and are at more or less a loss to explain the evidence supporting the alternative hypothesis. Clearly, a preferable analysis will combine the advantages of each by allowing WH-movement to escape the containing clause in some cases in order to occupy the head position at S-Structure. Essentially, this is the analysis of Cann and Tait (1990). The syntactic structure underlying a free relative such as *what you recommend* is:


DP
SPEC
D'
DET
NP
what: i
SPEC
N'
N
CP
t: i"
DP
C'
DET
NP
COMP
IP
t: i'
N
SPEC
I'
t: i
you
INFL
VP
recommend: j
V
DP
t: j
t: i*

In this structure, WH-movement has taken place into [SPEC, CP] in the usual manner. However, note that by the PFLP at this point neither DP, the lower one containing the relative pronoun, nor the higher DP containing the relative clause, is licensed.[14] In order for these DPs to be PF licensed, phonetic material must move into them at S-Structure. In this case, the relative pronoun *what* moves into its own c-commanding DET position, thus licensing its containing DP.[15] From [SPEC, CP], *what* can move into the c-commanding N position, assuming some form of SPEC-head coindexing (Chomsky 1986a). We have already required this coindexing to exist in order to get the proper semantic interpretation in normal relative clauses. This movement licenses the NP containing the relative clause. From this position, *what* may move into the DET position c-commanding the NP. At this point, the structure is fully PF-licensed. Given this analysis, all the arguments raised in favor of both the COMP and head hypothesis are met. Category matching derives from the constraints on head movement which requires movement to take place only into categorially compatible positions. The similarities between headed and free relatives comes from the base-generation of the WH-item within the relative clause. The island effects follow because, though we have allowed the head to escape the relative clause, no phrase can thus escape, as it is only the head position of NP which is coindexed with [SPEC, CP], thus no phrasal category could escape CP by moving into N.

Free relatives formed with *-ever* differ both in structure and in semantic interpretation. *-ever* is treated as arising at D-Structure as a bound determiner head of the containing DP. The structure underlying the rest of this sort of free relative is as above, but the Stray Affix Filter serves to force head movement of the relative pronoun to adjoin to DET *-ever*, though the PFLP

---

[14]We are interpreting movement here as freely available, and will assume the PFLP to filter trees which are not well-formed. In other words, nothing forces movement, but if movement does not take place, then the structure is ill-formed.

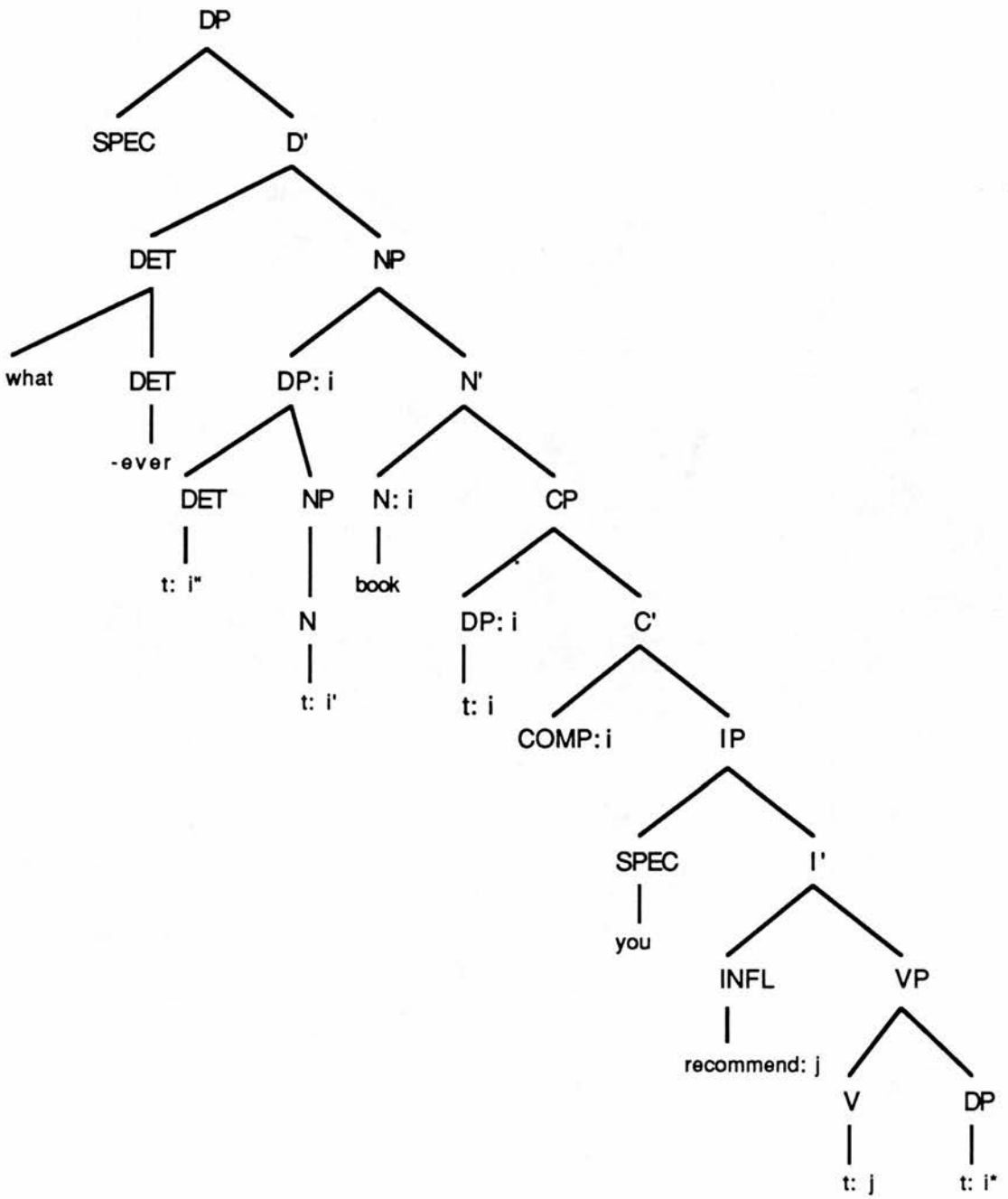
[15]It is a strange property of some words that they are lexical heads, yet require no other material in order to surface as maximal projections. In particular, this category includes pronouns, including relative pronouns, proper names, and intransitive verbs. The nominal categories here differ from intransitive verbs in that it is very difficult to add any modification, whereas it is unmarked for intransitive verbs to surface with some adverbial modification. The ability of these heads to undergo either phrasal or head movement requires some further study.

does not require this movement, as *-ever* licenses the DP. The scope properties of the quantifier interpretation of *-ever* are determined by its dominance at D-Structure.

The final kind of free relative in English to be considered are free relatives which contain a relativized NP rather than a relative pronoun.

I will read whatever book you recommend.

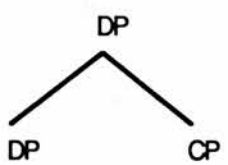
These free relatives illustrate a form of head movement allowed by both the head movement constraint of Cann & Tait (1991: verb raising) which requires movement to be strictly local, and by the Head Movement Constraint of Baker (1988). Although the sort of incorporation Baker treats are typically movement from sister of X to adjoin to X, if the maximal projection of c-command is correct, then movement should also be able to take place from [SPEC, XP] to adjoin to X, as X c-commands this position, and in some cases can also govern it. The tree structure corresponding to the sentence above is:



In this sort of free relative, called by Cann & Tait "incorporated free relative", the DP what book is able to escape from [SPEC, CP] into [SPEC, NP] through the coindexing relation mentioned earlier. Once in [SPEC, NP], *what* is able then to adjoin to *-ever*, satisfying the

Stray Affix Filter. The noun, *book*, is able to undergo head movement into its c-commanding and coindexed governing position, the N head, thus PF-licensing that NP.[16]

The final sort of free relatives considered by Cann and Tait do not demonstrate the matching effects noted above. These, called by Cann & Tait Non-headed Free Relatives, are held to demonstrate a fundamentally different deep structure from the sorts of free relatives discussed above. The free relatives considered above all result from a possible projection from the N, in the position of sister to N, by the X-bar schema operation. However, another possible location exists for relative clauses at D-Structure, through adjunction to DP at D-Structure. This configuration has been considered in the past as a possible structure for relative clauses, in particular non-restrictive relative clauses. The reading associated with them is a somewhat appositive reading, and the structure itself results from the operation of the Equative or Predicative schema of projection discussed in the next chapter. This type of relative clause has the attachment sketched in the figure below.



There is some evidence that this is a possible relative clause structure for English.[17] In grammatical non-matching examples from German, the relative clause is extraposed. The DP sister to the relative clause can be PF-licensed through predication coindexing with the PF-

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[16]It is possible that this latter movement is not necessary in order to satisfy the PFLP. The presence of the coindexed DP in [SPEC, NP] might be sufficient. It is further possible that the DP *what book* does not need to move from [SPEC, CP] in order for *what* to move into the coindexed c-commanding N. Further research on the exact limitations on head movement needs to take place before these issues can be resolved. Due to the restricted nature of this phenomenon, no syntactic tests are available to resolve the exact location of the various heads involved, as any intervening material, which could help to establish exact positions, also serves to block the movement in question.

[17]This structure could underly sentences in which a relative clause is extraposed, however, as extraction is simpler from this construction, as the relative clause need not cross the containing DP barrier.

licensed relative clause (Williams 1980). The data demonstrates that non-matching free relative clauses can only occur in an extraposed position in German. Cann and Tait derive this fact from the assumption that although the relative clause is coindexed with the DP at D-Structure, it cannot bind the DP unless it c-commands every segment of that DP (Chomsky 1986a). It cannot c-command the DP node which dominates it unless it raises through extraposition.

Another form of relative clause exists, which would appear to violate the PFLP. These, sometimes called bare relative clauses, contain no relative pronoun.

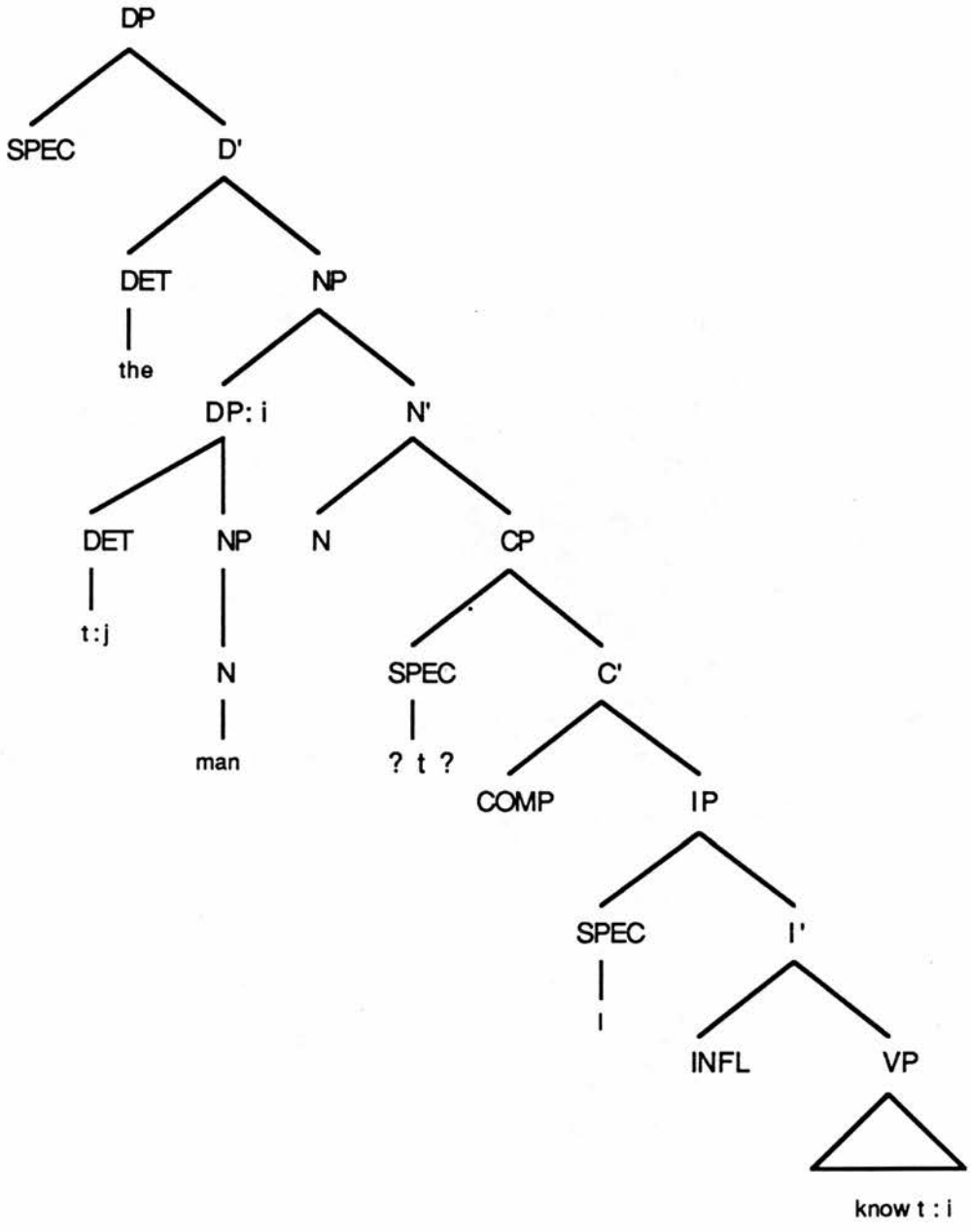
The man [I know] left.

I like the book [Bob wrote].

Chomsky (1988) analyzes these constructions as containing an empty operator binding the trace, the empty operator then referentially indexed to the NP head. A grammar incorporating the PFLP cannot invoke empty operators binding empty elements. Thus another explanation must be given for this construction. Given the PFLP, and the evidence cited above for treating all relative clauses similarly at D-Structure, we must assume that these examples have the following sort of underlying structure.

[DP [CP I know the man]] left.

The NP, *the man*, must somehow be able to raise, ostensibly to [SPEC, DP]. Consider the tree structure below:



The exact route of the DP *the man* out of the relative clause is not clear. As it is not moving to an argument position (though it does serve to PF-license a coindexed argument position) it can move through [SPEC, CP] without creating an improper chain. If this is the case, then the trace surrounded by question marks exists. This sort of NP-movement would then be similar to

topicalization, where an NP moves to a non-argument, non-case-marked position. However, if we extend the PFLP to consider INFL and COMP as lexical categories, we can interpret the relative clause in this construction as headed by IP, not CP. In that case, the questioned trace does not exist, as the projection of COMP containing it does not exist. Note that this kind of relative clause can never be extraposed, and only occurs with object relatives, this latter presumably due to the ECP. It can never be extraposed as it would have to arise from the predication structure, which does not allow movement into the DP from its sister CP.

This analysis, though somewhat radical, proposes the existence of a relative construction which is strikingly similar to the sort of non-headed relative clauses found in many non-Indo-European languages, commonly referred to as Internally Headed Relative Clauses. These are treated in the next section. We will see that the differences between English and true internally headed relative clause languages derive , in some respects, from the differences in case assigning properties.

7.2.1.2. Internally Headed Relative Clauses

Relative clauses without a phonetically overt external head provide a clear testing-ground for the PFLP. The prediction made by the Principle is that all internally-headed relative clauses will be characterized by some sort of phonetically overt element which serves to nominalize the relativized clause (in the absence of an identifiable relative pronoun) and which serves to PF-license the containing nominal. Consider the following data:

(14) ʾadą́ą́dą́ą́ ashkii á t'éé́d yiyiiłtsa-(n)ę́ę yidoots'os

yesterday boy girl 3/3/saw-REL 3/3/will kiss

'The boy who saw the girl yesterday will kiss her' (Navaho)

(15) he'i sen c'a:ndi u:bap'o mansu'-n 'i dokumq

that man yesterday wine 3/3/drink it 1/3/bought

'I bought the wine which that man drank yesterday' (Arizona Tewa)

Navaho demonstrates free null anaphora, thus the following are also grammatical:

(16) ʾadą́ą́dą́ą́ 'at'éé'd yiyiiɬtsa-(n)ę́ę yidoots'oo

'The one who saw the girl yesterday will kiss her'

(17) yiztaɬ-ę́é yicha

'The one who was kicked is crying'

If we assume following Jelinek (1984) that languages exist in which the Projection Principle is satisfied by pronominal affixes on the verb itself, and that any external lexical NPs occur as adjuncts at some level, then we can assume that these relative clauses are not actually missing any arguments themselves, and arise as adjuncts associated with a verb-internal pronominal argument through some form of referential coindexation.[18] However, Navaho lacks some of the defining characteristics of those languages which Jelinek confidently labels as W(arlpiri)-Type Pronominal Argument languages, in particular, Navaho does not have an AUX second constraint, which Jelinek identifies as definitional of this type. Further, if these lexical NPs in Navaho are true adjuncts, then the existence of a passive-like rule which focusses the PATIENT is unexpected. Transitive verbs in Navaho, in case their subject and object are both third person (i.e., they manifest no morphological agreement on the verb) display the BI/YI prefixes. These prefixes are often treated as an Inverse marking system. The unmarked prefix is YI, the presence of BI indicates that the immediately preceding lexical NP is the subject of the verb. YI is used when the immediately preceding lexical NP is the object, or in case there are no preceding lexical NPs.[19]

(18) 'ashkii 'at'éé'd yi-yiiɬtsą́

boy girl YI-saw

---

[18]Jelinek's proposal involving Pronominal Argument languages is discussed in some detail in Chapter Ten as part of a general consideration of the parameter involved in configurationality.

[19]As we have seen in other languages, this topicalization rule (BI) does not apply freely, but is obligatory in those cases where the object is higher on the Animacy Hierarchy than the subject, and is proscribed in those cases where the object is lower than the subject.

'The boy saw the girl'

(19) 'at'éé́d 'ashkee bi-yiiɬtsą́

girl boy BI-saw

'The boy saw the girl' or 'The girl was seen by the boy'

(20) 'at'éé́d yi-yiiɬtsą́

girl YI-saw

'S/he saw the girl'

(21) 'ashkii bi-yiiɬtsą́

boy BI-saw

'S/he was seen by the boy'

Relative clauses in Navaho behave like lexical NPs with respect to BI/YI.

(22) hastiin lii' yizloh-ę́ę́ yi'diilid

man horse YI-roped-REL YI-branded

'The man$_i$ branded the horse he$_{i/j}$ roped'

Speas (1989) and Cole (1987) present analyses of internally headed relative clauses. Both assume the existence of null pronouns acting as heads, exterior to the relative clauses. However, this causes difficulties with the Binding Theory, as R-expressions internal to the relative clause are anaphorically bound to the empty pronouns which c-command them. Thus a violation of Principle C arises. Speas seeks to avoid this violation by positing an operation at LF which aligns the relative clause parallel to the main clause, along the lines of an Across The Board interpretation (cf Goodall 1984, Williams 1978). Besides explaining the various grammatical readings available in Navaho internally headed relative clauses (IHRCs), this

analysis avoids the Binding Theory difficulty by treating the relationship between the coindexed R-expression and the null pronoun as not structurally defined. However, this sort of analysis is not available within the framework of this thesis, which requires all posited rules and operations to have some phonetically visible correlate, in order to insure learnability.

Cole, on the other hand, proposes adopting an older form of the Binding Theory which differs from Reinhart's (1976, 1981) formulation in only requiring that an anaphor cannot BOTH precede and command an antecedent (Langacker 1969, Ross 1969). As IHRCs are (generally) limited to languages which are head final (Gorbet 1976, 1977, Keenan 1985), the null pronoun must occur to the right of the RC which modifies it, thus it commands the coindexed R-expression, but does not precede it. However, this account evades the problem of discussing how an R-expression can ever be bound.

A further problem with the analysis of Cole is his assumption of the following sentence as a IHRC:[20]

(23)	nuna	bestya-ta	ranti-shqa-n	alli	bestya-m	ka-rqo-n
	man	horse-ACC	buy-PERF-3	good	horse-EVIDENT	be-PAST-3

'The horse the man bought was a good horse.' (Ancash Quechua)

Compare the following ungrammatical example:

(24)	*pi-ta-taq	qanyan	wamra	rika-nqa-n-ta	kuya-nki
	who-ACC-WH	yesterday	child	see-NOMINAL-3-ACC	love-2

'Who do you love the child that saw yesterday?'

---

[20]Interestingly enough, this is the only example of what he considers to be a grammatical IHRC in Ancash Quechua which Cole gives in his paper.

Note that the verb of the relative clause displays both a nominalizing suffix and a case suffix. Neither of these is apparent in the preceding example, suggesting that that example is not an IHRC, but arises as a sentential complement to an equative construction.[21] Cole himself notes:

> There are several reasons to believe that complement clauses in Quechua have the structure [NP [S']]. They are case-marked, as are nominal arguments, and agreement in complement clauses is drawn from the nominal rather than the verbal paradigm. (p 288)

Cole's analysis, involving a null anaphoric head which is final within the NP, together with a redefinition of Subjacency, predicts the following ungrammaticality:

(25) *Juan sisa-kuna-ta japi-shka gushta-j warmi

Juan flower-PL-ACC pick-NOMINAL like-NOMINAL woman

juyalli-mari

beautiful-VALID

*'The woman that Juan likes the flowers that picked is beautiful'

In this sentence the *warmi* has been illegally extracted from the relative clause acting as subject. "Extraction" from a relative clause acting as object is fully grammatical, however:

(26) pi-ta-taq qam rikaa-nqa-yki-ta pensa-rqo-nki

who-ACC-WH you see-NOM-2-ACC think-PAST-2

Who did you think you saw?

However, the analysis of Cole is also unavailable within this thesis, as it crucially involves heads which are null at S-Structure, yet are considered lexical at LF (cf Williamson 1987).

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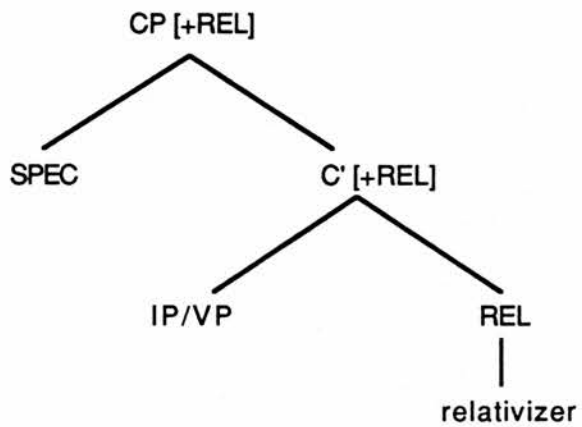
[21]See Chapter Eight for a discussion of the D-Structure of these constructions.

We can represent the most common structure for IHRC's as a clause which has been nominalized by either a relative marker, a nominalizing suffix, or a case suffix, as illustrated in the following tree diagram;



The generalization that appears to hold in terms of unmarked interpretation is that relativization of the object (or of the NP immediately preceding the verb) is preferred, as is apparent in the Navaho example (22) above.[22] The Quechua examples show that this nominalized CP can serve as the complement to a KP (case phrase). Subject agreement in these embedded clauses is drawn from the nominal agreement paradigm (coding possessor). Compare the following with example (26) above:

(27) pi-ta-taq qam rikaa-nqa-yki-ta pensa-rqo-nki

who-ACC-WH you see-NOMINAL-2-ACC think-PAST-2

'Who did you think you saw?'

---

[22]Similar restrictions hold in many languages with null anaphora and overt case on nominals, for example in the Eskimo languages, only ABS arguments can be interpreted as heading relative clauses. It is not clear what the theoretical explanation of this is. It could arise through the interaction of the grammar with parsing strategies, as the preferred attachment of an NP is as object, rather than subject or oblique (Matt Crocker, personal communication). It could be argued that this results from the object being anchored within the lexical entry of the verb, the correlate in Lexical Structure of proper government in D-Structure and S-Structure.

(28) peqa-yki

head-2

'your head'

Subject agreement appears outside the NOMINAL suffix, suggesting this agreement arises through SPEC-head coindexing with the subject in the specifier position of the CP:REL as indicated in the diagram above. This would seem to be a fairly unusual place for a subject to appear, but when we consider that no tense is manifest in these subordinate clauses we can hypothesize that the IP projection is absent from these structures. The subject must then anchor in [SPEC, CP] at D-Structure as [SPEC, IP] is not available.[23] This further highlights the similarity between clauses and noun phrases, where possessors arise in [SPEC, NP].

Diegueño (Yuman) distinguishes headless relative clauses from sentences by the addition of a case suffix on the verb, which is always final. This is a very common form of marking headless relatives.

(29) xatɘʞčok wī - m ʔətuč-pu-č ñiʞ

dog (ACC) rock-COM 1-hit-DEF-NOM is.black

'The dog I hit with a rock is black' or

'The rock I hit a dog with is black'

---

[23]This data suggests that COMP and INFL in themselves are not universal categories, but are examples of the sort of categories which do arise in most of languages. This analysis is generally equivalent to one which allows IP, rather than CP, to be nominalized (given the feature [+N] which allows a sentence be interpreted semantically and syntactically as an argument), in those cases where no TENSE is present (unlike Tamil, see Chapter One for data in which TENSE precedes a nominalizing suffix), as TENSE and NOMINAL are in complementary distribution.

In Diegueño no clear structural distinction emerges between (headless) relative clauses and other subordinate clauses. The full range of case suffixes for nominals also serve as subordinating conjunctions, as in the above case where the COM(itative) or instrumental case is used to subordinate an instrumental clause. To some extent, this phenomenon is easily confused with switch reference systems,[24] as in this case NOM case indicates same subject, all other cases indicating different subjects.[25] Consider the following (data from Langdon 1970):

(30) ñə-nəkəmič -əč tūpā

TEMP-return(pl)-NOM crack.acorns

'When they got back, they cracked acorns'

(31) t-ūjūw-m ?-um-s

PROG-stand-COM 1-look-EMPH

'I saw him standing there'

(32) mat ñ-ətū-pu-k ?-ačəmuç-x

REF 1O-hit-DEF-ABL 1-kill(pl)-IRR

'If he picks a fight with me, we'll kill him'

(33) wəsāw-ʎ w-ar-s

3-eat-ILL 3-want-EMPH

's/he wants to eat'

(34) ʔəwiʎ-pu-i ū-xwaʎ-pu-i ʔīwalp-č apəsiw

---

[24]This observation due to Justin Rye in a class paper in which he demonstrated that by assuming a different (more regular) phonemic inventory for Diegueno than that of Langdon 1970 it is possible to subsume all subordinating conjunctions to the set of (homonymic) case-markers.

[25]Presumably the same subject interpretation for NOM clauses arises through some sort of control relation.

rock-DEF-LOC 3-dig-DEF-LOC is.visible-NOM is-so

'Where s/he dug in the rock, it can be seen very clearly'

Piapoco (Arawakan), spoken by around 3000 people in the Eastern Plains of Columbia, demonstrates both headed and internally headed relative clauses (Klumpp & Burquest 1983). The noun phrase may consist of a single noun stem or pronoun (All examples are taken from Klumpp & Burquest 1983):

(35) núa 'I'

(36) á l a 'mud turtle'

Common nouns can also be modified by a determiner:

(37) yà-asu uruwàcha

3m-dem lake.turtle

'his lake turtle'

(38) áiba uruwàcha

other lake.turtle

'another lake turtle'

Adjectival modifiers also appear within a noun phrase:

(39) áuli achúmé-eri

dog small-M[26]

---

[26]Masculine (M) agreement is obligatorily marked as singular, Feminine agreement can be either singular or plural.

'the small dog'

(40) puìwi púubé-eyéi

hook tiny-Fpl

'the tiny hooks'

In discourse, nouns which have already been introduced are often deleted, so that referential noun phrases often appear as just an adjective, or as an adjective and determiner.

(41) machùné-eyéi

hairless-Fpl

'the bald ones (dogs)'

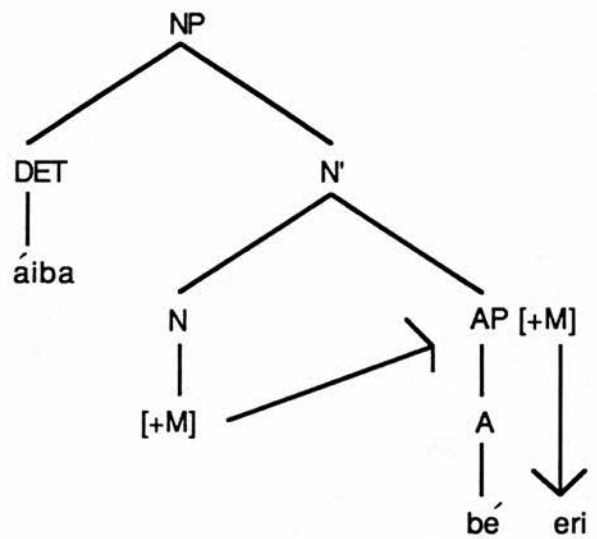
(42) áiba bé-eri

another old-M

'another old one (man)'

From the structure of the noun phrase we hypothesize that there is no DP projection in Piapoco, given the limited nature of determiners (limited to demonstratives and possessives). Further, we will assume that headless noun phrases are licensed by the presence of the adjective in the specifier or head position of NP. If the adjective always appears in [SPEC, NP] then we can adopt the convention that agreement arises through SPEC-head coindexing. However, this analysis leaves us with a floating determiner, unless we want the determiner to appear in the SPEC position of an AP in [SPEC, NP]. An alternative is to allow the adjective to agree with the head noun through coindexing under sisterhood (if the adjective arises as sister to the N) and then to allow the adjective to adjoin through head movement to the null N position in order to PF-license the NP. Given a strict interpretation of the X-bar projection operation, we are left with a puzzle as to where determiners arise in languages without a DP. There appear to be three possibilities; (i) DPs exist as syntactic projections, but both DPs and NPs can surface as

arguments at S-Structure; (ii) DPs exist as syntactic projections, and in the case of an empty DP projection, lexical material from the contained NP must raise in order to PF-license the DP. This is the analysis proposed for English in Cann & Tait (1990); (iii) A minimal DP arises in [SPEC, NP]. By minimal, we mean that it generally appears as a head without any lexically-filled specifiers or complements. We will adopt the latter analysis for Piapoco. The tree diagram below illustrates these points:



Relative clauses are generally postnominal:

(43) áiba asìeli yà-anè-eri síisade Cadá néese

other man 3m-arrive-M from.there Cada from

'the other man who arrived from Cada'

(44) niái inanáica i-yamé-eyéi-cawa capìi ìricu

those women 3-stay-Fpl-ASPECT house in

'those women who stayed in the house'

The verb in the relative clause displays the same agreement morphology as do adjectives. Piapoco also displays null anaphora:

(45) nù-anàa-∅

1s-arrive-ASPECT

'I arrive'

(46) yú-uwaa-cawa

3m-fall-ASPECT

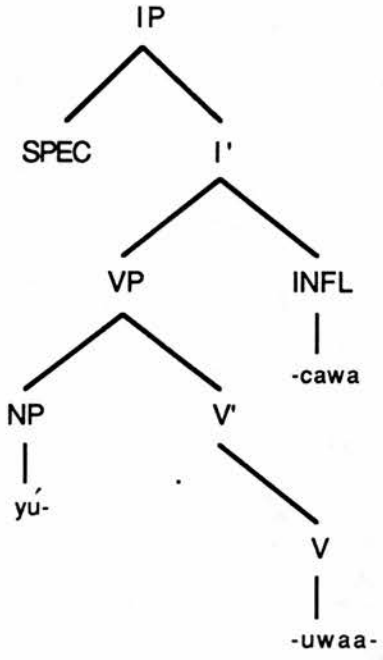
'he falls'

(47) ná-icáida-ca

3pl-watch-ASPECT

'they are watching'

One way of analyzing these simple sentences involves treating the subject agreement morpheme as an incorporated pronominal, derived from the following sort of D-Structure tree:



However, there is another possible analysis for this sentence that we can consider, which treats the subject agreement morpheme as a case of true agreement arising through SPEC-head coindexing. The following tree illustrates the S-Structure representation of this same sentence, this time assuming there is featural information in [SPEC, IP] identifying the subject.[27]

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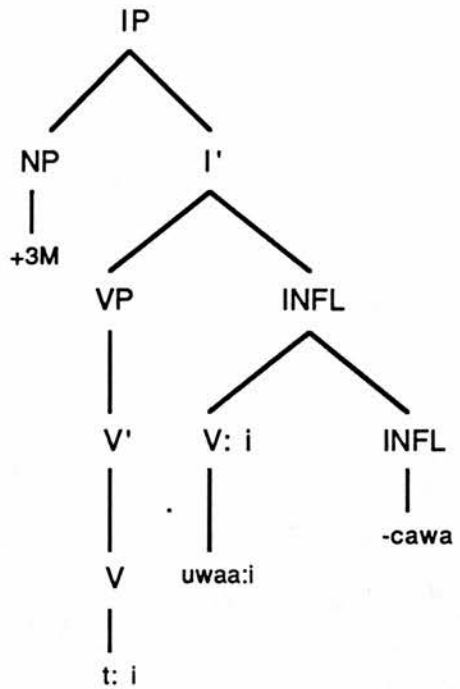
[27]This analysis would seem to indicate that there is an empty pronominal in [SPEC, IP]. This is not necessarily the case, however, though the serial verb construction facts, considered next, provide further complications.



Here we represent the verb as adjoining to INFL, and there picking up subject agreement through SPEC-head coindexing. Whether this is through feature passing (which I have been calling 'true agreement') or through incorporation of the subject agreement morpheme into the head position is difficult to determine at this point.

Verb serialization constructions also occur. All verbs in these constructions are marked with the same person marker, but often the aspect only appears on the final verb.[28]

(48) nu-íría nu-bàlùa-cawa

---

[28]Klumpp and Burquest add:

Alternatively, it could be argued that the nonfinal verbs occur obligatorily in that particular aspect which has no overt marker.

From this point on, I will suppress zero-marked aspect. As Klumpp and Burquest do not distinguish between the different sorts of aspect, simply labeling them all the same ('aspect'), it is difficult to motivate the existence of zero-marked aspect.

1s-climb 1s-stand-ASPECT

'I climb up to stand'

(49) i-dàba i-chàwidàa-ca

3m-start 3m-shoot-ASPECT

'he starts to shoot'

(50) u-pìa u-wàlùa-cawa

3f-run 3f-enter-ASPECT

'she runs to enter'

(51) wà-a wá-iría wa-bàlùa-cawa

1pl-go 1pl-climb 1pl-stand-ASPECT

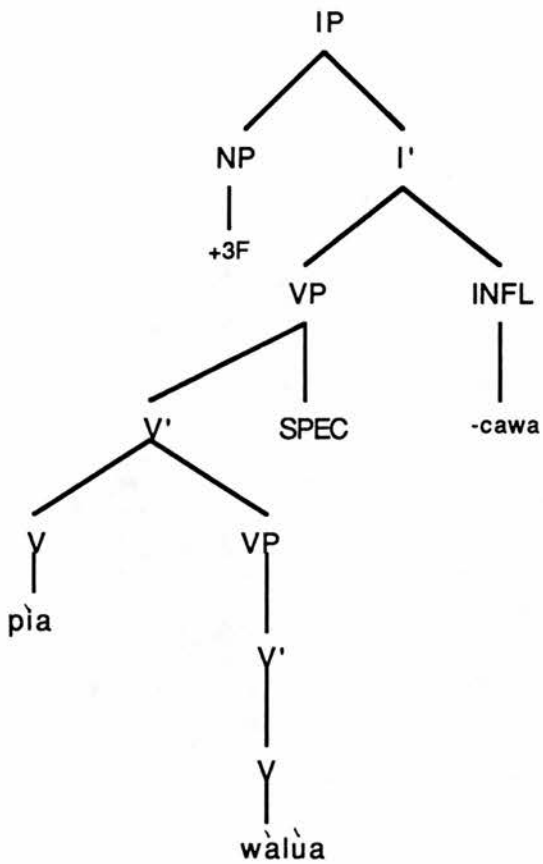
'we go to climb up to stand'

We may conclude from the fact that aspect is only overt on the final verb in such a construction that the aspect morphology heads an axial projection, perhaps IP, which dominates one or more VPs.[29] The presence of agreement morphology repeated on each verb is very interesting. It suggests the existence of a system possibly similar to switch reference, though Klumpp and Burquest do not give any data demonstrating a switch in person in the reference markers in these constructions.[30] Let's consider a possible D-S tree for one of the examples above, *upìa uwàlùacawa*, 'she runs to enter':

---

[29]If we want to treat the agreement markers as incorporated pronouns, then we must maintain the Lexical Clause Hypothesis for Piapoco, as we will need to treat these embedded verbs as VPs, rather than IPs, in order to explain their lack of aspect.

[30]The only example given which demonstrates different subject agreement in a series of verbs is:



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na-chànàa-ca	wa-yáa-Ø	nía	manùba	séebe
3pl-boil-ASPECT	1pl-eat-ASPECT	3pl	many	sardine

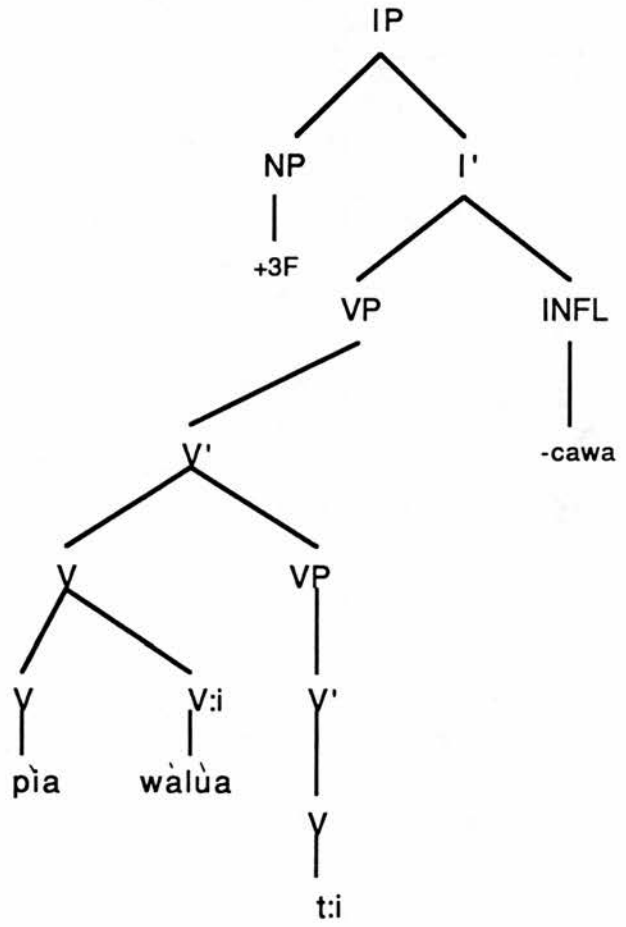
ná-umé-eyéi-sa

3pl-kill-Fpl-ASPECT

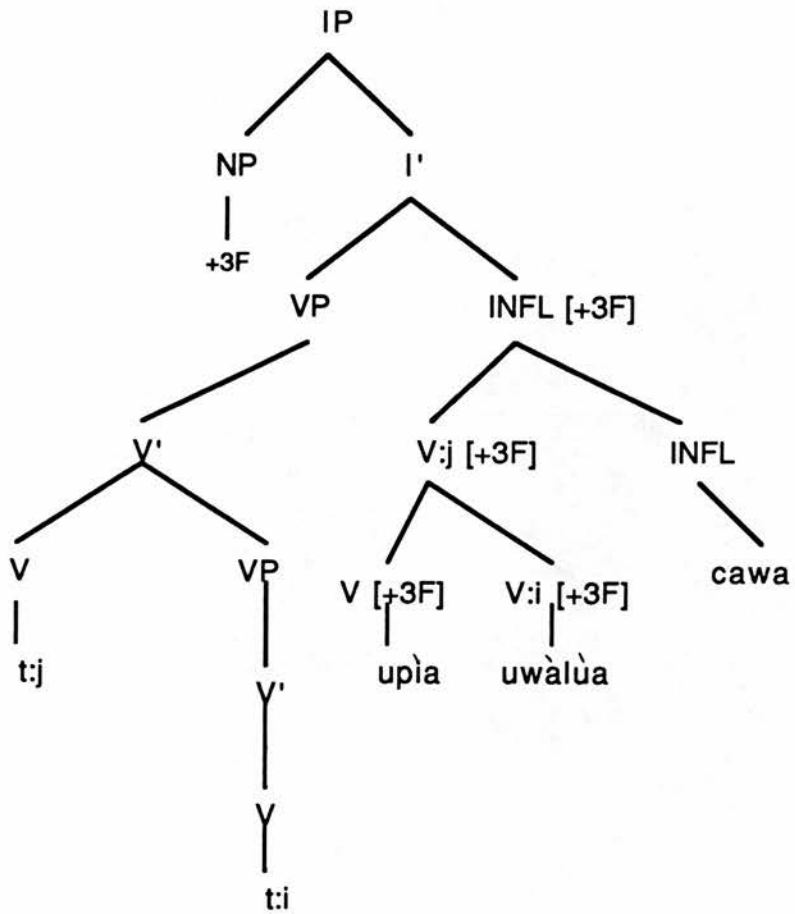
'they boiled for us to eat the many sardines which they had killed.'

Although the second verb in this example, *wa-yáa*, displays aspect, it is zero-marked. In any case, this construction differs from the one considered above in that overt aspect is marked on the initial verb in the sequence, which suggests that separate clauses are involved, rather than nested VPs.

We will assume an analysis which first incorporates the lower verb into the higher verb, rightwards, this complex verb then incorporates into the INFL *-cawa*, leftwards. In general, we will assume that head movement preserves D-Structure linear precedence. The problem remains at S-Structure to achieve morpheme harmony with the subject ag reement.



If the subject is in [SPEC, VP] we could trigger morpheme harmony at this point through the operation of SPEC-head coindexing on the agreement features. Piapoco would appear to not distinguish heads of X0 adjunction structures in terms of showing subject agreement. Otherwise, if we consider the subject to arise in [SPEC, IP] then this agreement harmony will not arise until both verbs have adjoined to INFL.



There are also various other types of clausal subordination:

Causative

(52) máisiba-cáiná wa-chàwidàa wa-lí-wa

three-CAUS 1pl-shoot 1pl-for-ASPECT

'because we shot three for ourselves'

Result/Future

(53) yé-ewáná-piná-té ì-ya-quéi cáini-ca

3m-be.able-RESULT-ASPECT 3m-exist-ASPECT bitter.manioc-ART

'that there might be bitter manioc'

Purpose

(54) pi-chàwidàa-caténáˊ pi-yáa-piná-wa

2s-shoot-PURPOSE 2s-eat-FUT-FUT

'that you might shoot (something) to eat'

Contingency

(55) uníˊa-caalíˊ yáˊ-uwaa-wa

rain-CONTIN 3m-fall-ASPECT

'if it rains'[31]

Hortatory

(56) wà-a-cué wa-chàwidàa uruwàcha

1pl-go-HORT 1pl-shoot lake.turtle

'let's go shoot lake turtles'

The suffix indicating the sort of subordinate clause affixes to the first word of the construction. We can treat this as a bound complementizer which requires something to adjoin to it in order to

---

[31]Klumpp and Burquest gloss this as 'if it falls', which is probably a typographical error.

satisfy the Stray Affix Filter.[32] This data, however, suggests an alteration to the tree structure above. We have assumed that the verb adjoined leftwards to the aspect marker. If the aspect markers behave like these complementizers, then they may be better analyzed as preceding the VP, thus the verb might adjoin rightwards to the aspect marker. This analysis brings the directionality of the head of INFL into line with the other syntactic heads, by placing the head's complementizer to its right. We see in our consideration of relative clauses below that this analysis is necessary in order to account for the verbal argument to the right of the verb adjoined to INFL/aspect.

Now let us return to our analysis of relative clauses in Piapoco, given the assumptions above about the structure of noun phrases and sentences. Consider again this example:

(57) níái inanáica ì-yamé-eyéi-cawa capìi ìricu

those women 3-stay-Fpl-ASPECT house in

'those women who stayed in the house'

Note that the verb in the relative clause takes the agreement morphology of verbs (subject agreement *i*) and adjectives (*eyéi*), and further takes the aspect marker (*cawa*) outside of the adjectival agreement. The following tree represents the D-Structure of the example above, which illustrates relativization on the internal subject.

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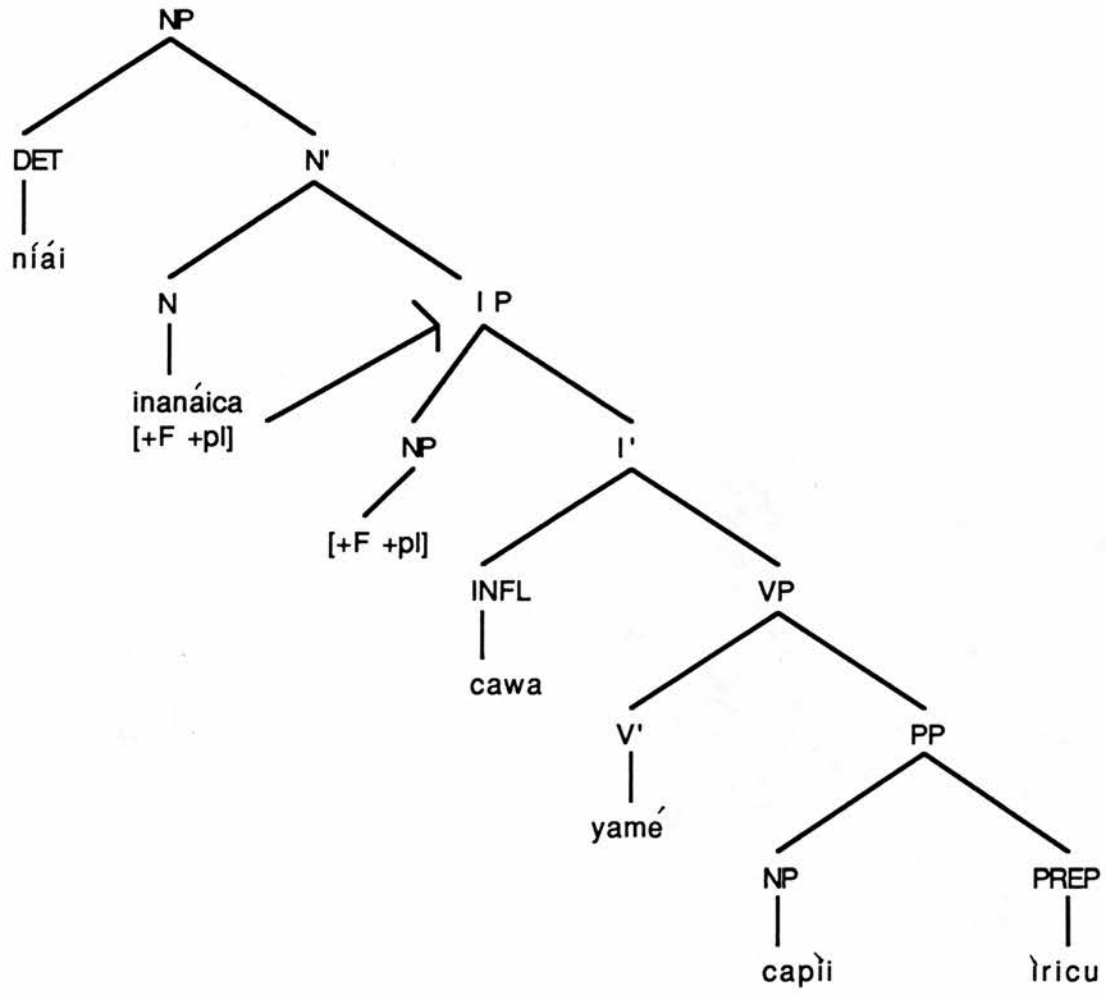
[32]Head movement is constrained so as to be strictly local, and to only allow adjunction to categories which are featurally compatible. It would appear from this data that COMP is compatible with both the nominal and the verbal systems, which is perhaps to be expected.



At S-Structure, the verb has adjoined to *cawa*, and has picked up two sets of agreement features, a prefix which marks subject agreement, and a suffix which marks adjectival agreement with the head noun which the clause modifies.

Serial verb constructions also appear within relative clauses.

(58) áiba asìeli yà-anè-eri i-páchia-ca yà-anàa

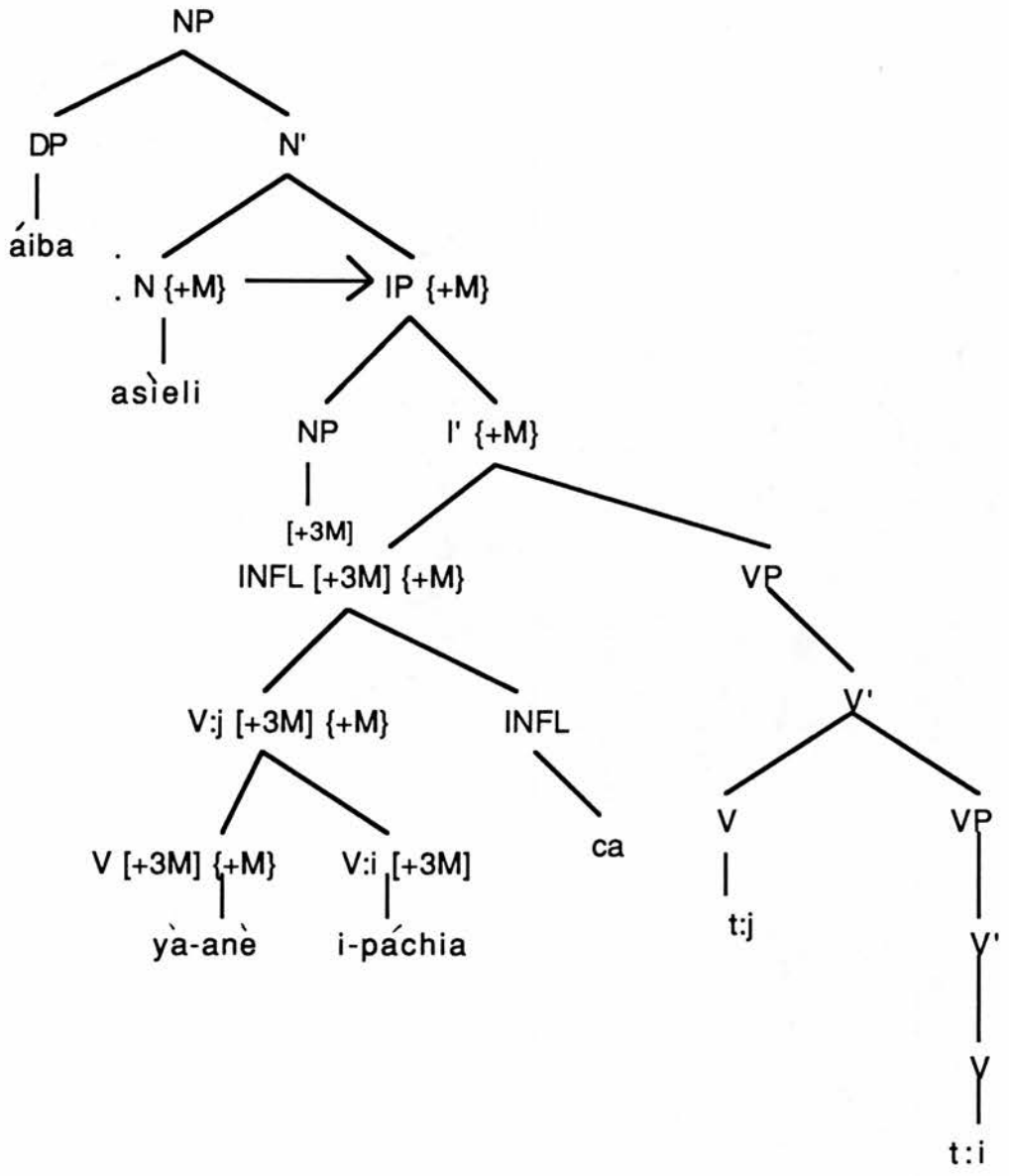
other man 3m-come-[+M] 3m-visit-ASPECT 3m-come

i-wénda amàca

3m-sell hammock

'the other man who arrived to visit came to sell a hammock'

In the serial verb construction *yàanèeri ipáchica* we see that the subject agreement has percolated to both verbs, but that the agreement with the head noun of the relative clause is only apparent on the first verb. This example provides interesting evidence of how the feature percolation works on the verb adjunction structures in Piapoco.



I have represented the adjectival agreement as {+M} and the subject agreement as [+3M]. The verb which receives the {+M} agreement surfaces with the appropriate suffix *-eri*. We cannot simply analyze the adjectival agreement morphology as a clitic, however, as in the case of more than one relative clause modifying the same NP (a structure we will consider to be coordinate), the agreement morpheme appears on both initial verbs.

(59) áiba asìeli yà-anè-eri síisade Cadá néese yà-anè-eri

other man 3m-come-{+M} from Cada at 3m-come-{+M}

i-pá́chia-ca yà-anàa

3m-visit-ASPECT 3m-come

'the other man who arrived from Cada, who arrived to visit, came . . .'

Headless relatives also appear in Piapoco:

(60) yà-a-wa i-té-eyéi-ca yà-ana

3m-go-ASPECT 3m-carry-{+pl}-ASPECT 3m-limb

'(the ones) who carry the animal's leg go'

The PFLP is satisfied in the case of the NP modified by the relative clause, by the adjectival agreement / relative clause marker *eyéi* on the embedded verb. This agreement morphology serves two purposes; (i) it nominalizes a sentence (and so should perhaps be better glossed as {+N, +pl}); and (ii) it satisfies the PFLP with respect to the N containing the relative clause by binding the N to phonetic material through feature percolation. This form of satisfaction for the PFLP appears not to be as robust as other forms, at least in the case of Piapoco. Although pronouns are generally infrequent, it is more common to have a relative clause headed by an overt pronoun:

> A further characteristic of the relative clause is that the free pronouns *níái* 'they', *yái* 'he', and *úái* 'she' are frequently associated with this construction. That is, to use these pronouns in addition to the person markers on the matrix verb is generally redundant in the main sentence, although it is quite appropriate in the relative constructions. (Klumpp & Burquest 1983: p 396)

Objects may also be modified by relative clauses, and objects can also be relativized themselves. The following example demonstrates both cases.

(61) na-yáa-wa yàacàsi-ca Cuwáisairi i-dàbé-eri-caté

3p-eat-ASPECT food-ARTICLE Cuwaisairi 3m-make-{+N, +M}-ASPECT

chènuni-ré

heaven-LOC

'they eat the food which Cuwaisairi[33] made in the heavenlies'

Finally, Piapoco appears to lack verbal negation, having only negative nominals. In order to achieve semantic negation of a predicate, Piapoco embeds the predicate in a relative clause modifying a negative nominal.

(62) Felífe caná i-chàwidè-eri

Philip nothing 3m-shoot-{+N, +M}

'Philip, there was nothing which he shot'

(63) caná nu-yé-eri

nothing 1s-eat-{+N, +M}

'There is nothing which I eat'

(64) Nataniel Felífe néeni-saca caná-ta

Nathan Philip there-ASPECT nothing-ASPECT

na-wichùé-eri-cáwa

3p-chop-{+N, +M}-ASPECT

'Nathan and Philip (went) there, but they haven't chopped anything yet'

---

[33]A superhuman being who created in heaven a tree which bore every type of edible fruit and vegetable.

Sentential negation is available to both relative and main clauses:

(65) áibanái-nica níái i-màaca-wa càmí-iyéi i-màaca

others-ASPECT 3p 3m-leave-ASPECT NEG-{+N,+pl} 3m-leave

i-wàwa ìwali

3m-heart about.him

'he will leave others (behind) who don't have faith in him'

(66) càmita wa-núa úa

NEG 1p-kill 3f

'We didn't kill her'

In their analysis of relative clauses in Piapoco Klumpp & Burquest conclude:

> We noted above (. . .) that adjective modifiers carry the same relative clause marker as verbal elements. If one makes the assumption that adjectival modifiers are in fact derived from embedded stative clauses, and that they carry the relative marker because they actually are relative clauses, the parallelism is to be expected. . . Based on such evidence it seems likely that the only type of modification which occurs within noun phrases is the relative clause, all other apparent types being derived from them. (1983 pp 398-399)

The analysis put forward above is broadly in sympathy with the analysis of Klumpp & Burquest. We derive this similarity between the marking on adjectives and on relative clauses from coindexing under sisterhood, both categories arising at D-Structure as sister to N.[34]

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[34]There is one problem with the analysis of Klumpp and Burquest, however, they have no way of accounting for the lack of aspectual markers on the adjectives, if they are reduced stative relative clauses. Consider the following:

(i) cayába-ca wa-wàwa

In this chapter we have considered the analysis of various types of relative clauses in terms of the framework developed in Cann and Tait (1990). The applicability of the PFLP as a constraint on structure in the analysis of true headless relatives (e.g. Navaho) and general sentential nominalization (Diegueño), and to headed and headless relatives in Piapoco has been apparent. We have further seen some instances of how agreement is manifested in various languages. One of the more interesting aspects of this data is to shed further suspicion on the existence of COMP and INFL as universal categories. Just as we have replaced the universal categories of noun and verb as language specific incidences of [+argument] and [+predicate], so it would seem we should now replace the universal categories of COMP and INFL as language specific incidences of (roughly) [+mood] and [+aspect], where [+mood] generally includes information as to whether the semantic interpretation of a sentence is as proposition, argument, question or command, and where [+aspect] generally includes information concerning the temporal or aspectual status of a predicate.

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good-ASPECT 1p-heart

'We are happy'

yá casíimái-ca wa-wàwa táquicha ná-apicha

then happy-ASPECT 1p-heart yesterday 3p-with

uruwàcha-ca

lake.turtle-ARTICLE

'then we were happy yesterday with the lake turtles'

8. Barriers

Currently, two sorts of movement are allowed within the grammar, phrasal movement (XP) and head movement (X^0). Thus, of the three major category types, only the X' level is singled out as immovable.[1] Phrasal movement is a well-studied phenomenon, comprising for the most part the emphasis of the work on Transformational Grammar of the last 30 years. Two main types have been identified, NP-movement and WH-movement, distinguished both in their acceptable landing sites (NP-movement must be to an argument position, WH-movement to a non-argument position[2]) and in the traces left behind by their movements (NP-trace is a pronominal, WH-trace is a variable). The chains formed by these movements also differ in their properties, in a chain headed by an NP, the head of the chain receives Case, and the termination receives a theta-role, and the erasure of intermediate traces is unacceptable. In the chain headed by a WH-phrase, both case and theta are assigned to the termination and intermediate traces are deletable under certain conditions (Chomsky 1986, Lasnik & Saito 1984). In both cases movement must result in the trace being c-commanded by its antecedent, thus preventing movement "downwards" in the tree. The precipitating factors for these two types of movement also differ, WH-movement occurs through either a WH attraction to a feature in COMP, or through (in English) a bound null WH-morpheme requiring material in [SPEC, CP] to cliticize to. NP movement has been assumed to occur through the need for the NP to receive case, although in an earlier chapter I provide arguments suggesting that this movement is precipitated through Theta-theory. In both cases movement must be to an appropriate category site, under the structure-preserving condition. Phrasal movement must be to a phrasal position, head movement to a head position.

8.1. Head-movement

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[1]This exclusion has prompted some linguists to propose that the intermediate, X' level, has no real existence as an object of cognition (Speas (1991), Cann (unpublished), Muysken(1982)). There could be an argument for treating differing properties of preposition stranding according to whether the preposition is a specifier, thus allowing no stranding as that would involve X' movement (French), or the preposition is a head, thus allowing stranding (English).

[2]Although Chomsky (1986a) assumes WH-in situ for questions on matrix subjects, with subsequent movement to [SPEC, CP] at LF.

It is only in the last few years that linguists have been looking in depth at the potentials for the treatment of certain morphological processes in the syntax. Baker (1988) uses this extension of Move-alpha to lexical heads to provide analyses for causatives, applicatives, noun incorporation, and passives. Heads move upwards, generally in order to satisfy the Stray Affix Filter which rejects any surface structures in which bound morphemes have no stem to attach to. They must move into a position which properly governs them, thus head movement is strictly local. This latter condition, the Head Movement Constraint (Travis 1984, Baker 1988), has been shown to be reducable in part to the ECP. Tait and Cann (1990) propose an even stronger version of the Head Movement Constraint in their account of the English auxiliary system, which blocks head movement over a filled specifier position. This may be seen to follow from the Minimality Condition, as the head of a specifier phrase could provide a closer possible governor for the trace.[3]

8.2. The Effect of X-Bar in the Mapping from L-Structure to D-Structure.

The mapping from the partial trees comprising lexical entries to D-Structure is accomplished by applying tree unification to lexical trees consistent with the templates established by X-Bar Theory. The most familiar template, commonly referred to as the X-Bar Schema, creates the axis of the tree by expanding the domain of lexical heads upwards to their maximal projection, and provides a specifier position which frequently acts as a functor on the X′ projection to yield the semantic category of the maximal projection. As, for example, in the case of the projection of N, where the specifier of NP, the determiner, maps a nominal into a referring expression, the semantic category of an NP.[4]

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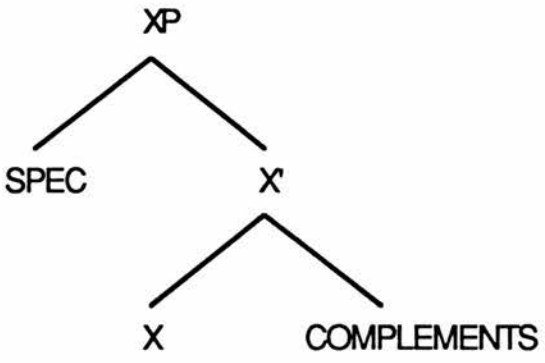
[3]Further research may show that it is only in those cases where the head of the specifier phrase could not be a possible governor under Relativized Minimality that head movement is allowed to cross a filled specifier position. This is arguably the case with V to INFL movement with ditransitive verbs, and with V to INFL to COMP movement in Subject-Aux Inversion.

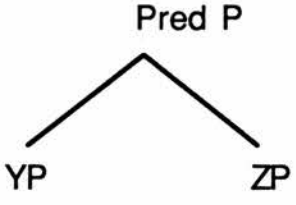
[4]If we adopt the DP analysis then the semantic function of SPEC becomes more complicated. In a system where minor categories project, the clearest examples of SPEC as functor occur in the auxiliary system, where it is the verbal specifier (*have* for PASS P, *be* for PROG P, etc.) which gives the maximal projection its verbal featural specification (Cann & Tait 1990).

We will refer to this configuration as the generalized X-bar schema.



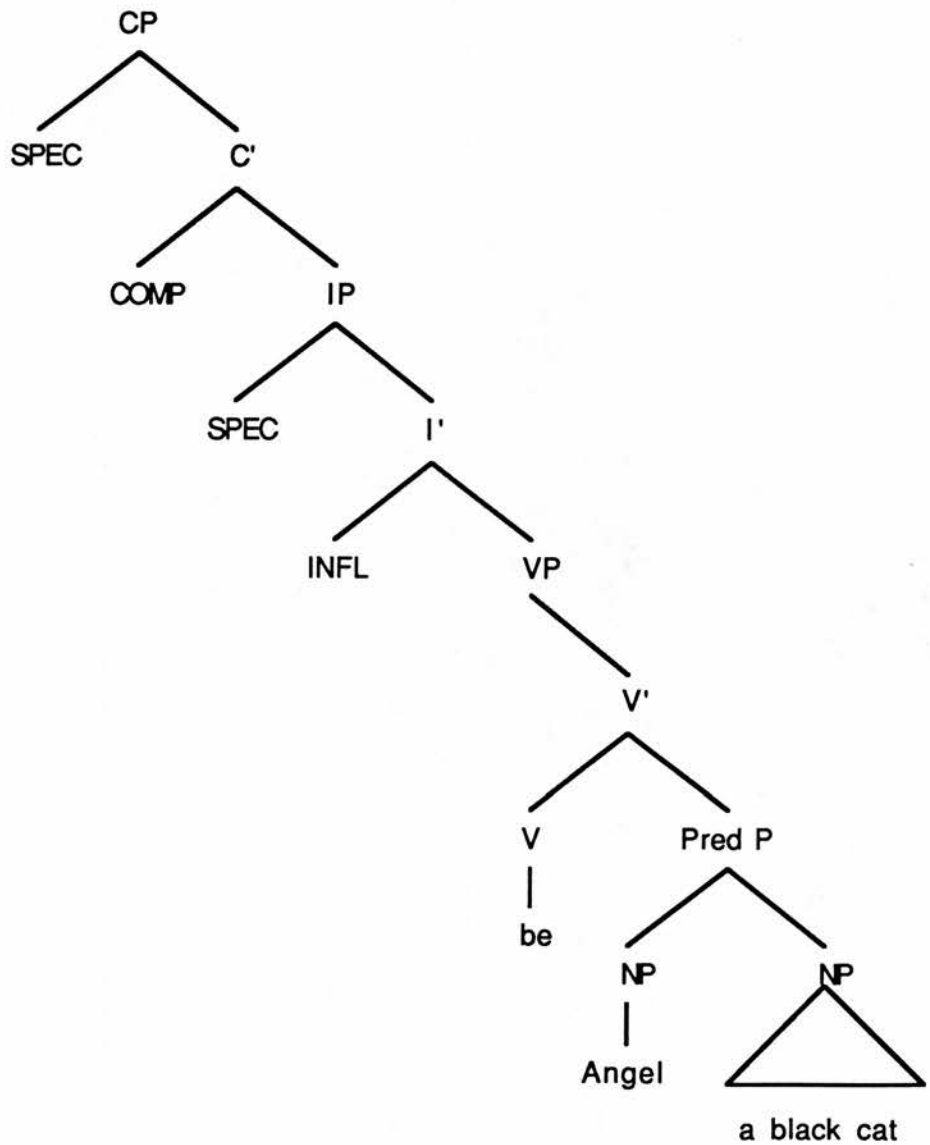
8.2.1. Predication/Equative Schema

The generalized X-bar schema given above, however, cannot be sufficient in itself to generate all the needed tree structures. In particular, it is not adequate to account for small clause constructions, appositions, copular sentences and locative inversions. We will consider these constructions as arising from the presence of a Predication (or Equative) Phrase at D-Structure. Let us consider first the case of copular sentences. Assume for the moment that *be* in English L-selects a Predication Phrase (PredP) which it theta-marks. Assume further that it assigns no external theta-role. Predication Phrases are distinguished from the generalized X-bar schema by not arising from the projection of a lexical head. They are in essence headless (or perhaps doubly headed). Further, we will assume that the daughters of PredP are predicationally coindexed.[5] We represent this structure below:

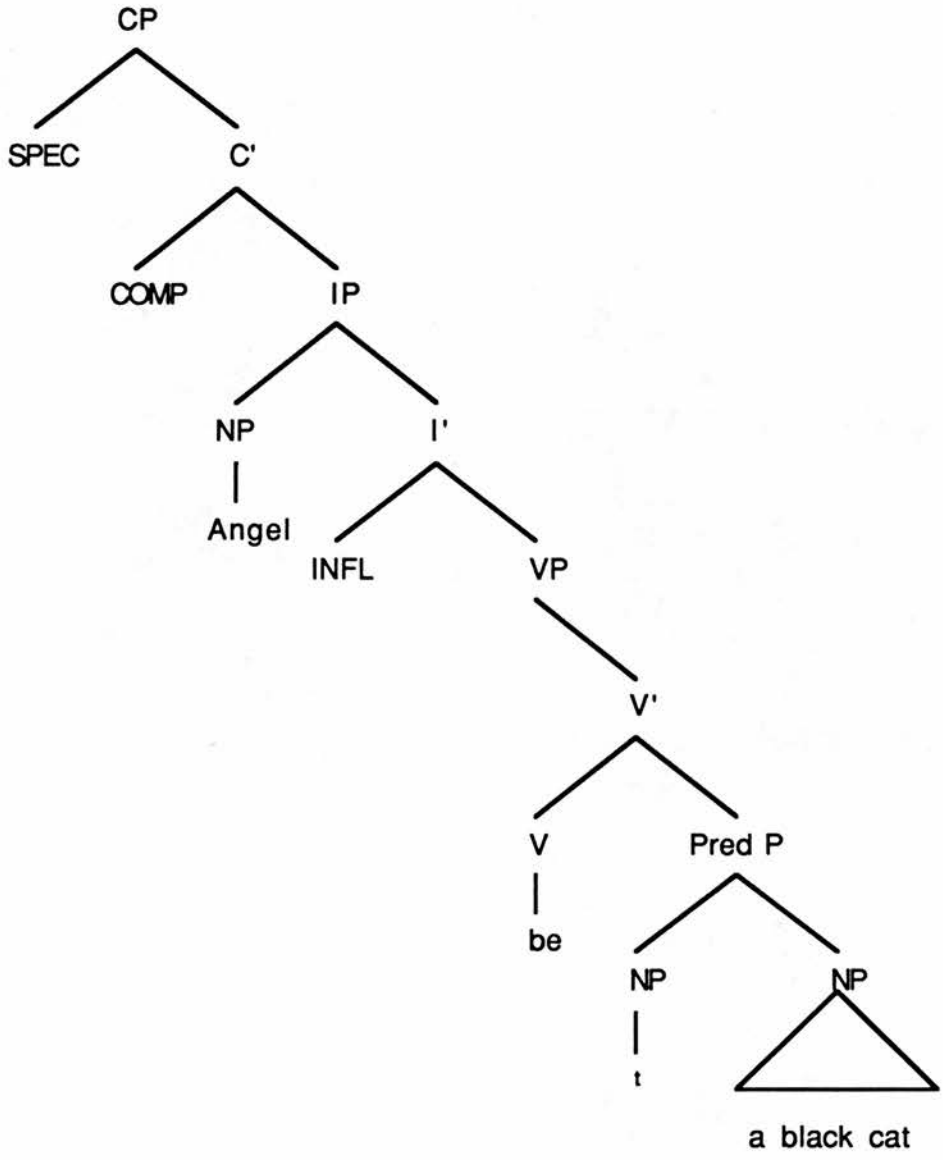


[5]The fact that they receive predicational indexing requires at least one of the coindexed maximal projections to be referential, i.e. NP. It does not matter which daughter is NP, though, they are essentially unordered.

Copular *be* can then be represented in the following D-structure configuration:



Either NP dominated by PREDP can raise to subject position. Biunique case assignment by INFL requires a lexical subject in English. The tree below illustrates the S-Structure for the tree above, after Raising.



The NP in subject position receives NOM case from INFL, satisfying the case-assignment type of INFL. Through the coindexing relation, NOM case is transmitted to the [NP,PREDP], sister of NP-trace. In some idiolects of English, *be* is interpreted as an accusative case assigner, a

generalization from the lexical category 'verb'. In such idiolects, the moved NP receives NOM case, and the remaining NP receives ACC case from the verb.[6]

As for the other constructions which require a PREDP, let us consider first typical small clause constructions. If we take *consider* as an example of a verb that L-selects a PRED P, then we can derive both the unraised:

(1) consider John a fool.

and the raised:

(2) John is considered t a fool.

Locative inversion constructions arise from the copular construction treated earlier, in the case where no raising takes place. *there* is an expletive element associated with PREDPs, just as *it* is the expletive element associated with generalized X-bar projections.

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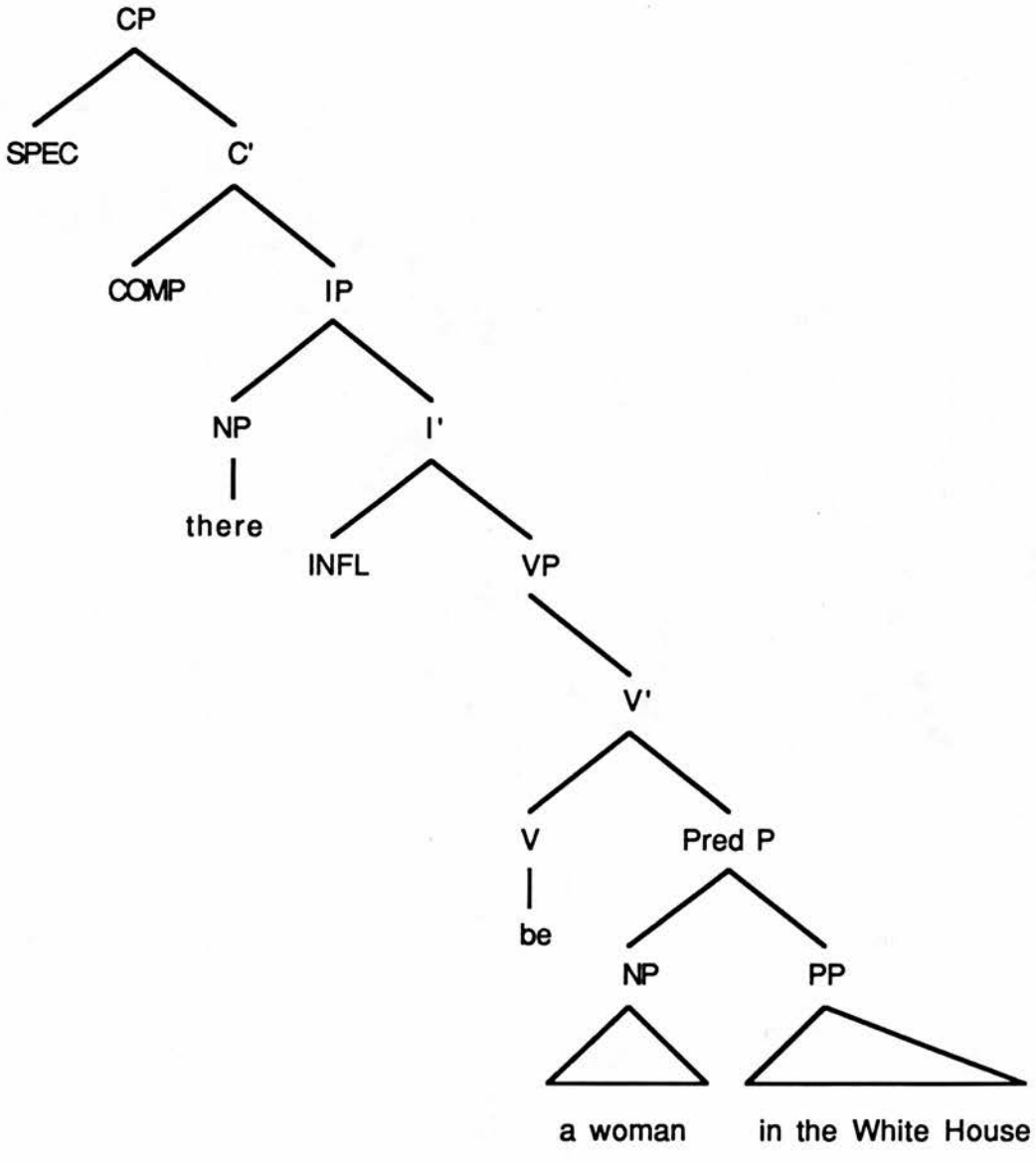
[6]In languages, such as Russian, where the copular verb only surfaces in certain tenses, we could extend this analysis to suggest that INFL can L-select a PREDP.



If movement does take place, then either of the following is possible:

(3) A woman is in the White House.

(4) In the White House is a woman.

In the second example, although the PP cannot itself receive NOM case, it can satisfy the biuniqueness of INFL case assignment by transmitting it to the lower NP.[7]

The case of appositives is perhaps more complicated. If we consider the following examples:

(5) George, the president, left the room dejectedly.

(6) Fred, happy at last, passed the exam.

We can straightforwardly supply them with a D-Structure representation in which the NP and its appositive are sisters dominated by a PREDP. This much is unproblematic, assuming we can invoke adequate intonation assignment. However, it raises the problem that a PREDP can satisfy the L-selection requirements of a verb which might otherwise seem to L-select an NP, as in the following.

(7) I dislike Fred, my boss.

PREDP's as subjects do not raise this problem, as the subject is not L-selected but must simply satisfy case and theta-assignment requirements. We could simply add "or PRED P" to the L-selection frame of any verb which selects an NP. However, this still leaves the problem of whether the PREDP is itself a barrier to extraction. If so, then we should not be able to extract from within an object NP arising as [NP, PREDP].

(8) I liked the picture of Bob.

(9) Who did you like the picture of t ?

---

[7]It could be the case that there is considerable ambiguity about the case-assigning ability of *be*. Speakers don't seem to feel very comfortable with either of the following:

(i) In the room was her.

(ii) In the room was she.

A contributing reason for this is the necessity for the pronoun to take sentence-final stress, which pronouns tend to resist. However, I think the latter example is to be preferred.

(10) I liked the picture of Bob, my neighbour/the movie star.

(11) *Who did you like the picture of t, my neighbour/the movie star?

(12) The picture of Bob, my neighbour/the movie star, interested the art dealers.

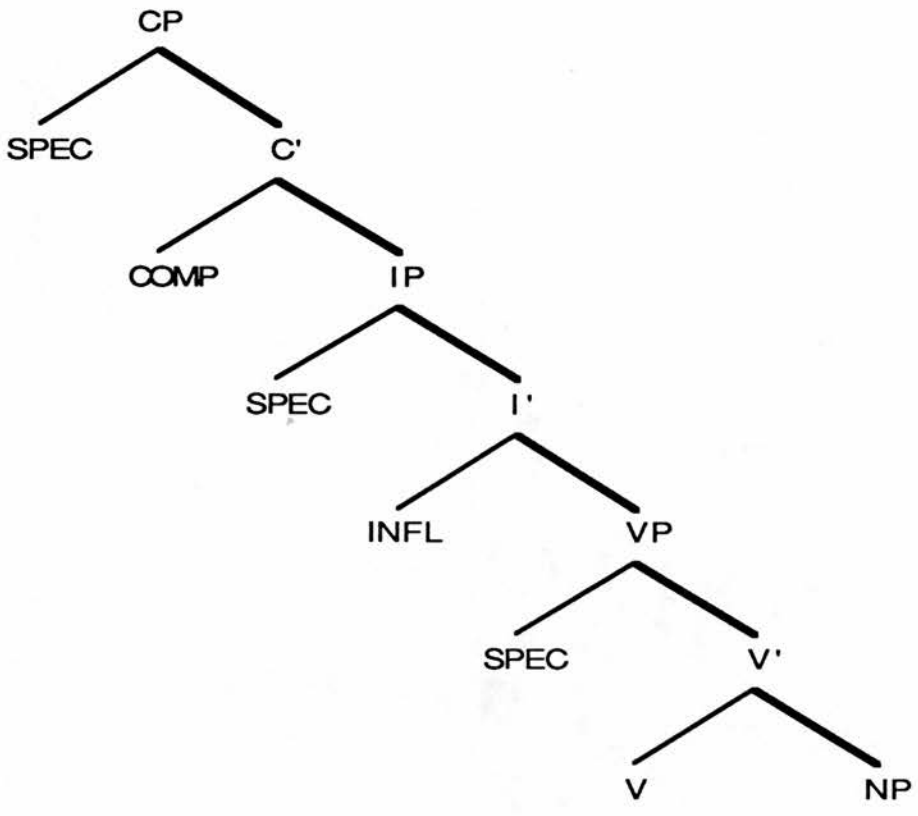
(13) *Who did the picture of t , my neighbour/the movie star, interest the art dealers.

(14) *Who did the picture of t interest the art dealers?

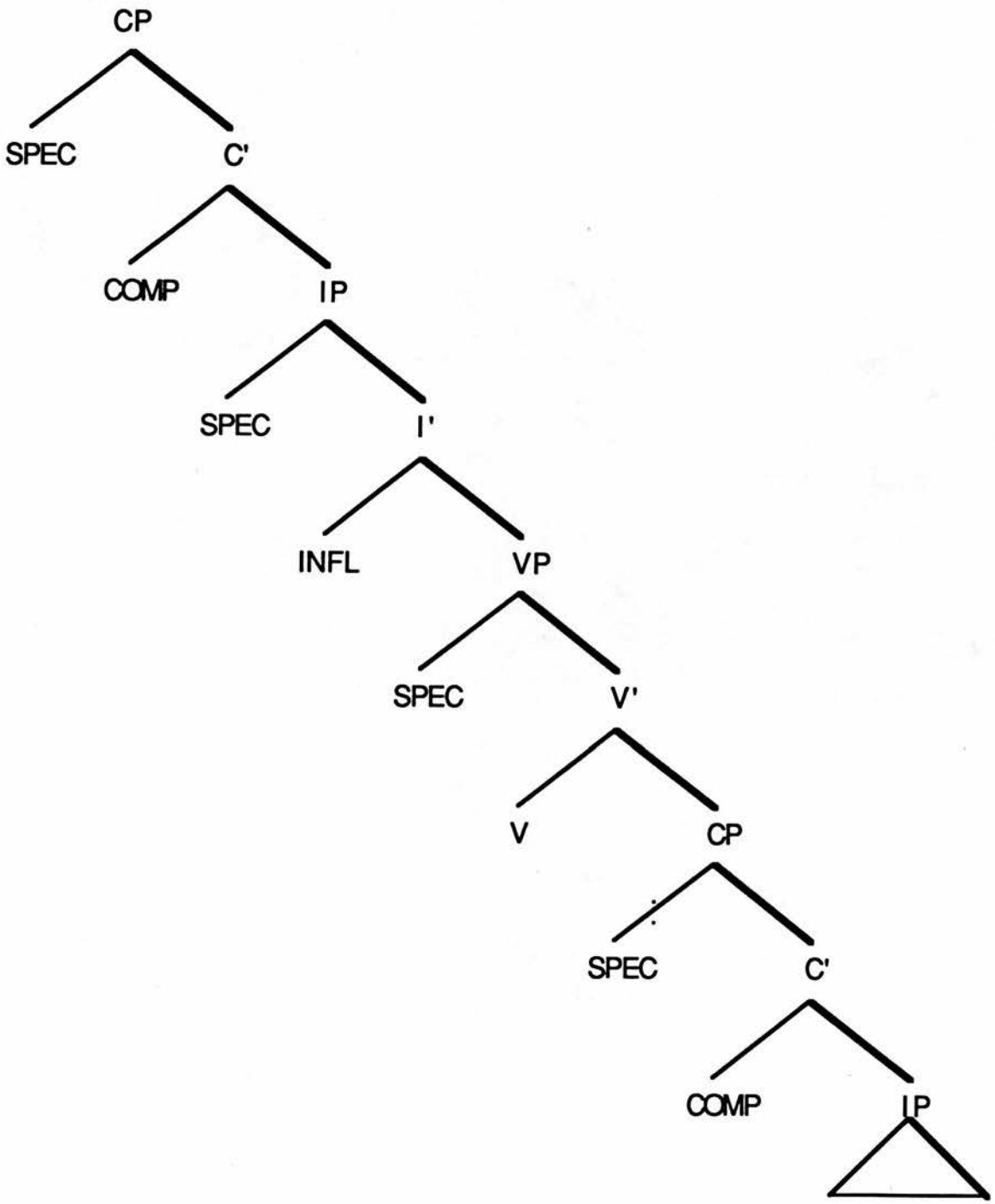
This prediction appears to be born out by the data. WH-movement out of the daughter of a PREDP produces ungrammaticality. The PREDP itself is not the barrier, as we saw above. Rather, the barrier arises in each of the daughters of PREDP, as they are maximal projections which are not L-selected. The last three examples are perhaps even more ungrammatical, exhibiting extraction from the additional barrier of the subject in [SPEC, IP]. Let us now turn our attention to a more thorough definition of this notion of barrier.

8.2.2. X-bar Projection and the Distribution of Barriers

If we consider the Barriers tree (Chomsky 1986a), we can describe the major axis of the tree as the path from CP-C'-IP-I'-VP-V'-etc. We thus consider COMP, INFL, and VERB as axial heads, as their non-lexical projections form the axis of the tree. In the figure below, the axial path in a simple transitive sentence is indicated by heavy lines.



The axial path in a more complex tree is illustrated below, again by a heavy line.


CP
SPEC
C'
COMP
IP
SPEC
I'
INFL
VP
SPEC
V'
V
CP
SPEC
C'
COMP
IP

Let us consider how this affects the definition of barrier. We define axial head as:

AXIAL HEAD: α is an **axial head** iff the maximal projection of α is L-selected.[8]

We will assume that all lexical categories L-select their complements, including INFL and COMP.

We define L-select as:

L-SELECTION:

α L-selects β iff:

(i) α is a lexical head;

(ii) α is sister to β; and

(iii) α is subcategorized for β

All maximal projections are barriers unless they are axial maximal projections. Thus we define a barrier as:

BARRIER:

α is a **barrier** iff:

(i) α is a maximal projection; and

(ii) the head of α is not an axial head.

---

[8]This clause excludes adjuncts, taken to be daughters of X′ projections. We make no differentiation as to which lexical items can L-mark. Any PF-present head L-marks its complement.

We have thus modified the definition of barrier to exclude any axial maximal projections.[9]

8.3. Barriers Relativized by Position

The definition of barrier proposed above, in short, that all maximal projections are barriers unless they are L-selected, has the effect of making the definition of barrier relativized by the position of the maximal projection in the tree. If we take all lexical categories, now including COMP and INFL, as being potentially capable of L-selection, then the definition of barrier becomes much more generalized. L-selection is taken to be the relationship that holds between a head and any maximal projection sister which it lexically selects in some manner. It is clear in the case of English that COMP must be able to select an IP which is either + or - finite, depending upon its own lexical properties (eg, whether it is *for* or *that*). It is also clear, given the extended IP analysis of Pollock (1989), and Cann and Tait (1991) that elements like INFL, (or PROG or PERF or FIN) must also be able to lexically select their VP complement. Thus we take another step in the direction of granting full lexicality to the formerly minor categories of COMP and INFL.[10]

The set of categories which are capable of L-Selection then may vary from language to language. If this is the case, then the formulation of barriers in a particular language is inherent in the lexical properties of its vocabulary, where vocabulary is broadly construed to cover both bound and free morphemes. Barriers are then parameterized according to lexical properties, thus providing an account of barrier phenomena which corresponds to the general program of locating parametric effects in the differing properties of lexical items.

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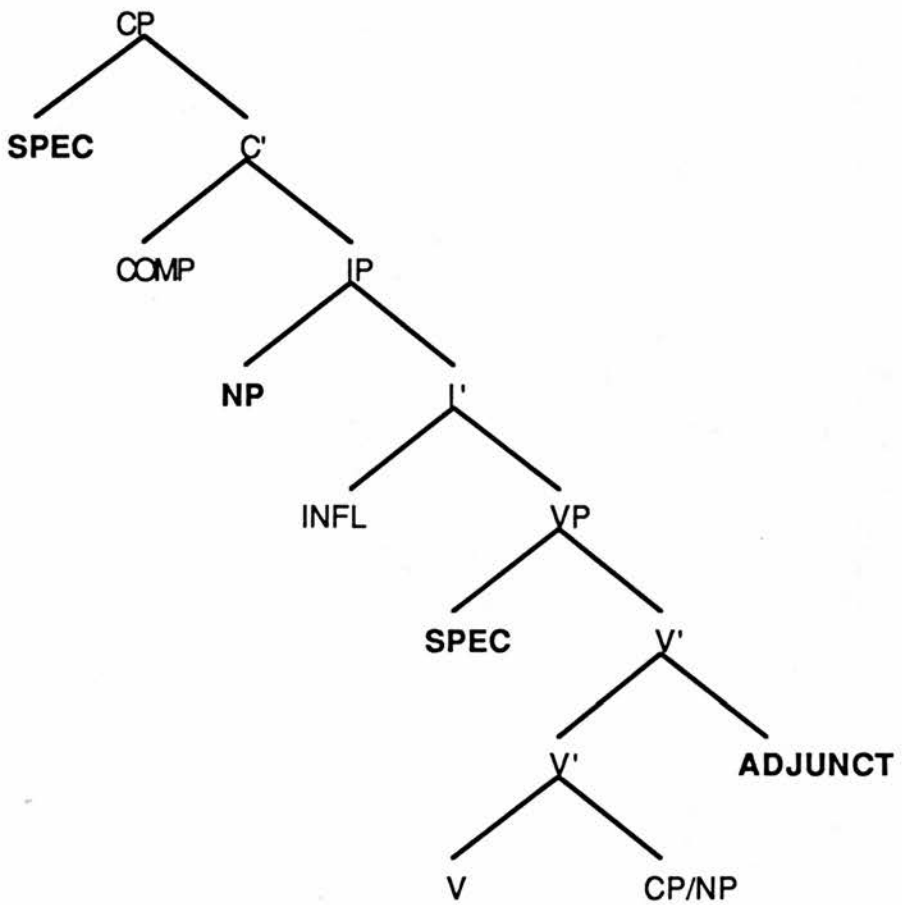
[9]To a large extent, this is equivalent to Chomsky's definition of barrier, as most of these maximal projections are L-marked. The major exception is VP.

[10]Tradition has no doubt played a large part in delaying this recognition to these categories. It may be, further, that COMP and INFL must be considered as lexical categories within the definition of the PF-Licensing Principle, thus suggesting that they, and their maximal projections, are not present in the representation of a sentence unless they are PF-licensed. This move would then produce an analysis of some sentential complements similar to older, S' erasure, accounts.

The adoption of the definition of barrier as a non-axial maximal category thus identifies certain positions of a tree as constituting islands. These inherent islands, shown in bold on the tree below, are (i) specifiers, and (ii) adjuncts.



Specifiers and adjuncts are islands as far as extraction goes, as they constitute barriers by virtue of their position in the tree. They can, however, be themselves extracted, subject to the satisfaction of the ECP. I have represented the VP adjunct in the tree above as appearing in a base-generated adjunction structure. Adjunction to X' categories has not been considered possible by some linguists, including Chomsky. We can maintain this prohibition for the creation of adjunction structures in the mapping from D-Structure to S-Structure, however, I see no reason to

suppose that they cannot exist as a base-generated structure, a position for true adjuncts (that is, adjuncts not just by position, but by semantics).[11] However, identifying adjuncts as islands is not dependent upon this proposal for their D-Structure position. If they do arise as sisters of the head in certain constructions, they will still not be L-selected by the head (if they are an adjunct) and thus will remain barriers. I have only represented a VP adjunct. The island-creating quality of adjuncts holds for D-Structure adjuncts to any category. Note that by restricting barrierhood to maximal projections we do not create barriers by adding D-Structure adjuncts, as they are adjoined to non-maximal projections. Adjunction structures at S-Structure resulting from maximal projection adjunction will create barriers, however.

8.3.1. Barriers by Inheritance and Inherent Barriers: Chomsky's Formulation

In Barriers, Chomsky considers two types of barriers, barriers by inheritance or innateness (Blocking Category) and Minimality barriers. Although it is not made explicit, barriers by Minimality appear to only be relevant to head-movement, and not to phrasal movement. Therefore, we will only consider the first category of barriers here.[12] Intuitively, barriers arise from a lack of lexical government. One of the sets of data which barriers should capture are subject-object asymmetries. That is, we derive subject-object asymmetries from the fact that the verb lexically governs the object but not the subject. Another distinction in the extraction data that barriers must account for is the differing behavior of subjects of finite versus non-finite clauses. This was formerly known as the Tensed S Condition. In this section I present

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[11]The adoption of this configuration for representing true adjuncts is not a new one, but is similar to that adopted by categorial grammar. That is, in the X-bar system an adjunct is both the sister and the daughter of a single-bar category, thus it does not contribute to the "completion" or "satisfaction" of any requirements of its sister, in the way an object can satisfy the requirements of a verb to yield a VP.

[12]Minimality barriers are reformulated in Cann & Tait (1990) and Tait & Cann (1990) which strengthens the Head Movement Constraint in order to maintain strict locality. In this formulation, heads are unable to move over filled specifier positions which they neither govern nor theta-mark. In terms of Chomsky's Minimality Condition, this follows as the head of the phrase in the specifier position constitutes a closer possible governor for the trace of the head.

Chomsky's (1986) formulation of barriers, including some relevant definitions. In the course of this exposition I indicate areas where the system developed in this thesis differs. We will see how the adoption of certain analyses have forced Chomsky to abandon a maximally general definition of barriers in favor of a more baroque one. By replacing those problem analyses, we will then be able to remove the impediments to a definition of barrier more consistent with Chomsky's original intuition.

Chomsky identifies two possible types of movement; substitution and adjunction. They are taken to have the following properties. There is no movement to complement position by the Theta-Criterion. Movement to a complement (theta-marked) position would result in a violation of the theta-criterion, assuming the substituted category has already received a theta-role from its D-Structure position. This has been used as the reason for not considering raising to object constructions in the Principles and Parameters model. However, like raising to subject, raising to object is possible in the case where the element raises to a non theta-marked position (in this case [SPEC, VP]).[13] Movement is further constrained by the bar level of the element to be moved. Only X^0 can move to a head position, by some version of Emonds' Structure-Preserving Hypothesis (Emonds 1976). Only a maximal projection can move to specifier position, by X-bar Theory: heads cannot be base-generated without a maximal projection so that a bare head cannot appear in the specifier position to receive a moved X^0 category. Only minimal and maximal projections are "visible" for the rule Move-alpha. Therefore, substitution (excluding head movement) will always move a maximal projection to a specifier position. Two major cases are NP movement to [SPEC, IP] and wh-movement to [SPEC, CP]. Movement by adjunction is possible only to a maximal projection that is a nonargument.[14] (Barriers, p. 6) Thus adjunction to NP and CP is ruled out, adjunction to VP is allowed. The evidence for this distinction comes from movement at LF. As movement at LF is difficult to observe, I will treat this sort of evidence with some skepticism, unless it is substantiated by

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[13]See chapter Six for a full exposition of this analysis.

[14]Here we must assume that this refers only to movement of a maximal projection. Head movement by adjunction is to a like category, a head.

some more visible data.[15] Thus, I see no reason, a priori, to restrict adjunction so as to disallow CP and NP as hosts. In many cases, such an adjunction will yield a violation for other reasons, for example, adjunction of an argument NP to another argument NP may have adverse consequences for the operation of the Case Filter. Further, adjunction to CP is taken to be the structure created in topicalization.[16]

Chomsky adopts May's interpretation of adjunction structures (May 1985):

> α is dominated by β only if it is dominated by every segment of β, (Barriers, p. 7)

C-command is defined as:

> α c-commands β iff α does not dominate β and every γ that dominates α dominates β, (Barriers, p. 8), where γ is restricted to maximal projections (Aoun & Sportiche 1983) we will say that α m-commands β.

The definition of both c-command and government will be required for Chomsky's definition of barrier. Intuitively, α governs β if α m-commands β and there is no barrier γ that dominates β but not α. Thus a barrier will protect β from being governed by α. That is (government in terms of domination):

> I.α governs β iff α m-commands β and every barrier for β dominates α (Barriers, p. 8)

Chomsky then defines exclusion, as in the following structure . . . δ . . .[$_{\gamma}$ α [$_{\gamma}$ . . .β . . .]] if we want α to govern β, then we must say that δ excludes α but γ does not:

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[15]As a partial justification for this extension of the PF-Licensing Principle to govern methodology, as well as representation and acquisition, let me just point out that only by considering LF as a level of syntactic representation is the autonomy of syntax preserved. If, as is equally likely, LF is a level of semantic representation then appealing to LF considerations can only be construed as violating the autonomy of levels. As long as the exact status of LF remains unclear, it seems justified to view arguments crucially based on LF properties of a representation with some suspicion. We might consider the status of LF as more incontrovertible once the semantic representation that it acts as input to is elucidated.

[16]See Chapter Five for a discussion of topicalization, and below for a discussion of how this topicalization adjunction creates an island.

α excludes β if no segment of α dominates β.

Now, a new definition of government (government in terms of exclusion):

II. α governs β iff α m-commands β and there is no γ, γ a barrier for β, such that γ excludes α.

Except for adjunction structures, the two definitions of government above coincide. Government selects what counts as a barrier (Barriers, p. 10). In the following configuration:

$\ldots\alpha\ldots[_{\gamma}\ldots\beta\ldots]$

β is protected from government by a maximal projection γ containing it. In terms of minimality then α does not govern β if there is a "closer governor" as illustrated below:

$\ldots\alpha\ldots[_{\gamma}\ldots\gamma\ldots\beta]$

γ is a closer governor, so γ' is a barrier (with respect to α) even though it isn't a maximal category.[17]

Chomsky concludes that either IP or CP must be a barrier based on examples like the following:

John decided [$_{CP}$ e [$_{IP}$ PRO to [$_{VP}$ see the movie]]]

As PRO must be ungoverned, a barrier must exist between it and the verb in order the block government of PRO by the verb. Thus the maximally general exemption of barrierhood through L-marking cannot hold here. Chomsky must then determine whether IP or CP, or both, are inherent barriers. He concludes that IP cannot be given standard analyses of ECM, in which the verb is allowed to govern and thus case assign the subject of an infinitival complement. CP also cannot be an inherent barrier, because Kayne (1984) provided evidence that [SPEC, CP] can be governed from outside, just like [SPEC, IP]. Further, Belletti and Rizzi (1981), argue that the

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[17]Minimality assumes that the trace susceptible to "closer governors" is the trace of an X^0 category.

head of NP can be governed from outside the NP, and Stowell (1981) and Saito (1984) argue that the presence of a particular complementizer depends on government of the head of CP.[18] The ECP of Lasnik and Saito (1984) also assumes that [SPEC,CP] is governed from outside. Therefore: either two maximal projections constitute a barrier, here CP and IP together, but government across one is permissable, or one such category constitutes a barrier, but only in some relative sense. Though he sees no major distinction between the two, Chomsky suggests that the latter is the better formulation.

Thus we can think of CP as inheriting barrierhood from IP, so that CP will be a barrier for something within IP, but not for something in the pre-IP position (i.e., [SPEC, CP]).

A category β theta-marked by α will be a barrier only by inheritance, not inherently. (Barriers, p. 12). This can be expressed in terms of Head Marking, which is the relation between a zero-level category (a head) and the phrases to which it assigns some feature (theta-role or case). This relation can also be called L(exical) marking. There are several relations relevant to L-marking. These are: (i) theta-marking which meets a condition of sisterhood. Thus, it is only direct theta-marking which is relevant. Indirect theta-marking of the subject, by VP, doesn't count for these purposes; (ii) the relation of agreement (as between subject and INFL); and (iii) Chain Coindexing, or the relation between elements in a link of a chain.

Given the above, Chomsky can then define barrier in terms of Blocking Category:

γ is a BC for β iff γ is not L-marked and γ dominates β.

The definition of barrier is then:

γ is a barrier for β iff (a) or (b)

a. γ immediately dominates δ, δ a BC for β (inheritance)

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[18]In a footnote Chomsky notes problems with this analysis, points out that it is inconsistent with conclusions reached in section 11, and then adopts it.

b. γ is a BC for β, γ =/ to IP(inherent barrier)

where γ is a maximal projection, and immediately dominates a relation only between maximal projections.[19]

Theta-government (the core case of government) is defined as:

α theta-governs β iff α is a zero-level category that theta-marks β, and α ,β are sisters.

L-Marking is thus defined in terms of theta-government:

α L-marks β iff α is a lexical category that theta-governs β..

This is taken to distinguish NP and CP as playing a special role, due to the presence of a subject giving a "complete functional complex" (Chomsky 1981, 1985). Therefore, in our example earlier, CP inherits barrierhood from IP, which is a BC as it is not L-marked.

Proper Government serves to license empty categories, in accordance with the ECP which requires every trace to be properly governed. Following Lasnik and Saito (1984): the ECP doesn't hold of pronominal elements PRO, pro or any empty operator, but it does hold of A-bound and A-bar-bound trace, and maybe of the empty head of CP (Stowell 1981). At D-Structure all empty categories are pronominal, so the ECP only holds of empty categories introduced during the course of a derivation (holds at LF).

According to the ECP a nonpronominal empty category must be *properly governed*, where proper government is defined as follows:

Proper Government I

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[19]The definition of barrier I have proposed is essentially the same, but does not need the first clause (a) as there is no inheritance of barrierhood. One barrier is sufficient to block a government relation. Further, I have eliminated the exceptionality of IP by the assumption that COMP L-marks IP.

β is properly governed by α if it is governed by α and a certain kind of connection holds between α and β (1986a p. 17)

The connection invoked may be either theta-government or antecedent government. Antecedent government holds of a link (α, β) of a chain, where α governs β. We express this chain relation by coindexing.

Proper Government II

α properly governs β iff α theta-governs or antecedent-governs β. (1986a, p. 17)

This is where the subject-object asymmetries arise. An object is properly governed by its head sister (the verb), but subjects or adjuncts can only be antecedent governed (given this conception of X-bar (Huang 1982)).

Gamma-marking (Lasnik and Saito 1984) determines satisfaction of the ECP: α assigns the feature [+ gamma] to β if it properly governs β and that β receives the feature [- gamma] if it is not properly governed., where gamma-marking, once assigned, is permanent. Gamma-marking takes place at S-Structure for elements of chains terminating in A-bar positions, and at LF for elements of chains terminating in A-positions (perhaps as a consequence of the Projection Principle).

Sisterhood Condition on Theta-government II

α theta-governs β iff α is a zero-level category that theta-marks β, and α, a are sisters, or β is the head of a sister of α. (1986a, p. 19).

VP-movement (*Fix the car, I wonder whether he will* (ex. 38)), leaves behind a trace which has to be properly governed, therefore it must be properly governed by *will*, as it is not antecedent-governed. INFL theta-marks its complement, but doesn't L-mark them because it isn't lexical. (1986a, p. 20).

In small clauses such as:

(15) they consider [$_{\alpha}$ John [$_{AP}$ intelligent]]

α is a projection of *intelligent*, *John* is its subject, receiving theta-marking from the AP 'head'. *consider* case-marks *John*, thus must govern it. Therefore α can't be a barrier for government. We used to have to use 'S' reduction' to achieve this. Now, since *consider* theta-marks α, α is not a barrier for its immediate constituents and thus can be taken to be AP.

However, *consider* doesn't theta-mark the subject of the small clause, but the subject must leave a properly-governed trace under A-bar movement, as it can extract over a WH-island, as in example (16) below:

(16) who did they wonder whether to consider [t (to be) intelligent]

(17) *John seems that it is considered [t to be intelligent].

In (17) t is neither antecedent-governed by *John* nor theta-marked by *consider*, so it is not properly governed and thus an ECP violation results. But in (16) t must be properly governed (because it's grammatical). So, we have to allow adjunction to VP for intermediate trace movement. This intermediate trace can then be erased at S-Structure in order to avoid an ECP violation, but it will have already licensed the terminal trace. VP-adjunction is barred in (17) under standard assumptions blocking "improper movement".

In the alternative account of barriers proposed in this chapter, we take the grammaticality of (16) to result from the absence of any barriers between t and its antecedent *who*. The ECP is also satisfied as t is bound within the minimal domain of a subject, assuming PRO has no syntactic existence. The ungrammaticality of (17) results from an ECP violation. The trace t is not bound within the minimal domain of the subject *it*. Thus the following would be grammatical: *John seems to be considered t to be intelligent* as t is bound within the minimal domain of the subject, in this case, *John*.

Chomsky also considers another approach using an extension of proper-government to include case-marking:

> Proper Government III
>
> α properly governs β iff α theta-governs, case-marks, or antecedent-governs β.

However, a problem exists for the extension of L-marking to include Case-marking if we conclude, with Chomsky, that *consider* properly governs t in (16) but not in (17). Consider the following:

(18) *How did Bill wonder [CP who wanted [t' [to fix the car t]]]

here *wanted* can't properly govern t', as if it did the sentence would be grammatical. So you can't let *want* case-mark t' even though *want* is a case-assigner and governs t', the specifier of the most deeply embedded clause.[20] Thus, Chomsky abandons this extension of proper government to include case-marking and keeps the VP-Adjunction analysis, concluding that the theta-governor of CP L-marks its specifier ([SPEC, CP]).

The verb L-marks CP, and through that governs [SPEC, CP] and COMP through SPEC-head agreement. Then you can get rid of the +/- WH specification of *wonder* and just let it select [+WH], the WH-phrase in SPEC satisfies the selection properties of the V. Thus selection is a head-head relation. Selection is then formulated along the lines of L-marking. But, though [SPEC, CP] is L-marked by α, the theta-governor of CP, it is not theta-governed by α, just as the NP specifier of IP is L-marked but not theta-governed by the V governor of IP in a CP-deletion construction. This distinction is crucial in blocking long WH-movement of adjuncts, the analog now of 'super-raising'.

Three relations are relevant to the theory of government:

(1) theta-government

(2) SPEC-head agreement in IP and CP (the two nonlexical projections)

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[20]A more likely explanation for the ungrammaticality of (18) is that *how* must move through the [SPEC, CP] which *who* occupies, and thus leave behind a trace, in order for the Binding Theory to be satisfied. Movement of *who* into this position produces a Binding Theory violation, by covering up the trace of *how*. Here we are assuming that some principles of A-Binding will carry over to A-bar Binding, as they must in the case of wh-trace. Otherwise, there is no reason to suppose that WH-movement needs to be COMP-to-COMP.

(3) chain coindexing.

The first two relations enter into L-marking and thus into the determination of BCs and barriers. (1) and (3), but not (2), enters into proper government. (1) holds under the Sisterhood Condition. References to Case-marking can be eliminated with respect to proper government in favor of VP-adjunction, and with respect to barrierhood in favor of SPEC-head agreement. Proper government is a subcase of government involving the indexing of chain links or theta-government.

There is a problem with allowing successive cyclic movement with adjunction to VP in sentences like:

(19) How does John think you fixed the car t?

Subjacency Condition (1986a, p. 30)

If (α_i, α_{i+1}) is a link of a chain, then α_{i+1} is subjacent to α_i.

But we have to keep the right result for

(20) Who did [$_{IP}$ John [$_{VP}$ t' [$_{VP}$ see t]]]

We need exlusion here to reformulate subjacency:

β is n-subjacent to α iff there are fewer than n+1 barriers for β that exclude α.

1-subjacency is what holds for movement. 1-subjacency is adjacency. Therefore languages don't have to have counters to keep track of different types of subjacency, they can just privilege 1-subjacency. In the analysis I have developed, 0-subjacency is the only subjacency relevant to movement. This appears to be a strengthening of the position of subjacency. Thus we have fewer barriers, but they are more strictly interpreted. By relying on processing principles to

establish the attachment of extracted adjuncts we eliminate the need to treat VP as a barrier, and then to allow VP-adjunction as a means of escaping this barrier.[21]

8.3.2. Barriers as Non-axial Maximal Projections

In the preceding section we considered Chomsky's formulation of barriers, along with some of the problems it raises. Now let us consider how the simplified definition of barrier by position proposed earlier in this chapter deals with some of the classical extraction data.

8.3.2.1. A-over-A

> In a structure . . . [A . . . [A . . .]A . . . A] . . ., if a structural description refers to A ambiguously, then that structural description can only analyze the higher, more inclusive, node A. (Chomsky 1964, quoted from Van Riemsdijk and Williams 1986).

Although A-over-A was subsequently shown to be both too weak, and too strong, it does provide a general famework for considering a set of islands to extraction. Let us consider these in turn.

Coordinate Structures: Also known as the Coordinate Structure Constraint, it was observed that it is impossible to extract one element of a conjunct. Consider two different proposed structures for coordinate clauses. Note that in either case each XP, internal to the mother XP, which could be extracted is not blocked from such extraction under the definition of barriers proposed in this chapter. In each case, although the XP is the daughter of a maximal projection, provided that maximal projection is L-selected, then the maximal projection will not be a barrier to movement. Thus, if our formulation of barriers is correct, then neither of these can be the appropriate structure.

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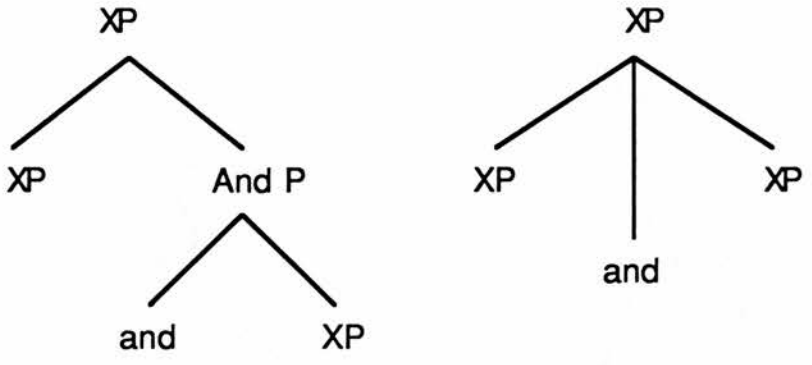
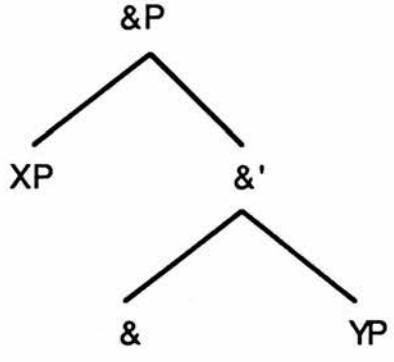
[21]This discussion of barriers has concentrated on barriers in WH-movement constructions.



In order to create an unbreachable barrier in the maximal projection of a coordinate construction, we must first of all exclude *and* from the class of L-selectors, otherwise, any maximal projection sister to *and* will be L-selected and thus not a barrier to extraction. We can justify this in that *and* is indiscriminate in terms of the categories it requires for subcategorization purposes. We will thus represent this degenerate lexical property of *and* by representing it as the logical operator '&'.[22] Consider the following tree expansion of & following the general X-bar schema.



This illustrates the general structure for binary coordination. The maximal projection of & is a barrier to extraction as it is never L-selected. If it arises as a coordinate object, the thematic and case assigning properties of the verb will be satisfied by percolation downwards from the &P to the arguments of &. This allows for coordination of unlike constituents; X need not equal

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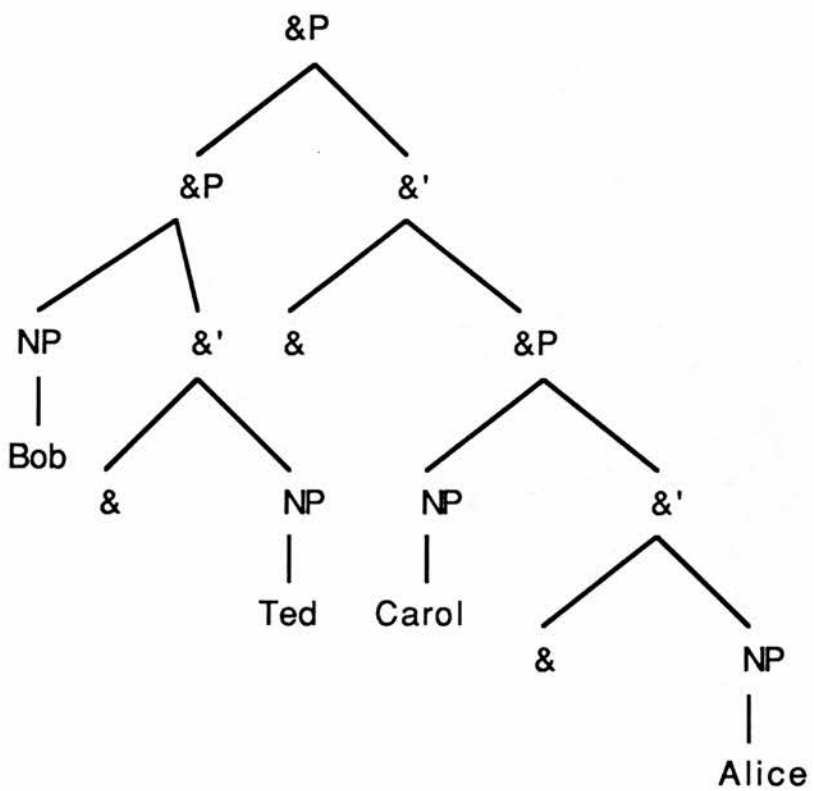
[22]Presumably, the analysis given here for *and* can be extended to cover *or* as well. Whether or not this conjunction schema can be considered universal will not be considered here.

Y categorially. As & neither case assigns, L-selects, or theta-marks, but is only a logical operator, all such information must reach the maximal projections internal to the &P by percolation. It is also possible to deal with non-constituent coordination by allowing the arguments to & to be any lexical projection, not necessarily maximal. Non-binary coordination can arise either by recursion of the &P as arguments to &:



or through adjunction to a projection of &[23].

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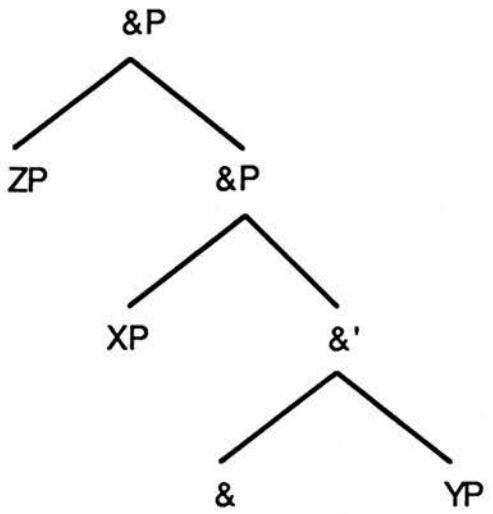
[23]Whether this adjunction is to &P or to &' seems to be strictly a theory-internal issue, as I can think of no data which would be evidence one way or another.



An NP that is part of a subject NP cannot be questioned or relativized (VR & W p. 21)

Because subjects are in [SPEC, IP] they will always create barriers for extraction for any maximal projection internal to the specifier position of IP.

> An NP that is contained in the sentential complement to a noun cannot be questioned or relativized. (VR & W p. 21).

This follows straightforwardly as nouns don't L-select their sentential complements. Thus the [CP, N'] is a barrier to extraction. This also explains why relative clauses form barriers to extraction.

In their discussion of these facts, van Riemsdijk and Williams bring up some extraction facts which seem to be related to A-over-A, but which are not covered by it. These include: (i) an adjective phrase cannot be extracted from an NP, (ii) a PP cannot be extracted from the same contexts as those given above for NPs, and (iii) in many languages, an NP cannot be extracted from a PP (i.e., no preposition stranding). This system accounts for these facts as follows: (i) assuming a DP analysis, we could consider AP's as originating as adjuncts to N'. As these APs are not arguments, the Projection Principle does not require them to leave a trace. The only grammatical instances of WH-movement of an AP arise in cases where the AP is an argument (e.g. *How happy do you expect me to be t?*). The first site we have considered for the D-Structure position of APs doesn't give us the right result. Let us consider whether we can treat

them as arising from an NP-internal predication phrase. Clearly, the semantics of adjectives lends itself easily to this analysis. If the AP is the daughter of a Predication Phrase, which is itself in [SPEC, NP] then the Predication Phrase will form a barrier to extraction for the AP.[24]

The second noted addition is less problematic. If a maximal projection is a barrier to extraction, then it is a barrier to PP extraction as well as to NP extraction. (iii) follows if we assume that in those languages which do not allow preposition stranding, PREP is not a proper governor. If this is the case, then the ECP will not be satisfied. Alternatively, we could consider that in these languages, prepositions do not head PPs (i.e., they do not project lexically and so are not lexical heads), but appear internal to the NP. Thus extraction of what appears to be an NP is actually extraction of a non-constituent. These two approaches are more or less notational variants, as the first analysis follows logically from the second.[25]

8.3.2.2. The Complex NP Constraint

> No element contained in an S dominated by an NP with a lexical head noun may be moved out of that NP by a transformation (Ross 1967 (4.20)).

As in most cases nouns are not L-selectors, any phrasal complement to a noun will be a barrier to movement, whether of NP, PP, or VP.

8.3.2.3. The Sentential Subject Constraint

> No element dominated by an S may be moved out of that S if that node S is dominated by an NP which itself is immediately dominated by S (Ross 1967 (4.254)).

As subjects arise in a specifier position, in a sentential subject, or CP, the CP is itself a barrier to extraction from within the sentential subject.

(21) That Ronnie was living with Robert bothered the Pope.

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[24]This cannot be considered to be a very satisfactory explanation. However, a better explanation will have to await a fuller treatment of the internal structure of noun phrases.

[25]Again, a fuller treatment of these facts is dependent upon a clearer understanding of NP structure in these languages.

(22) *Who did that Ronnie was living with t bother the Pope?

(23) It bothered the Pope that Ronnie was living with Robert.

(24) ?Who did it bother the Pope that Ronnie was living with t ?[26]

If the sentential subject is extraposed as in (23 & 24) then the extraction is somewhat more grammatical, thus illustrating that it is the location of the sentential complement in the specifier position that is problematic for extraction.

8.3.2.4. The Left Branch Condition, and Upward Boundedness

> No NP that is the leftmost constituent of a larger NP can be moved out of this NP.

Consider the following data:

(25) You recognized Bob's wife's voice.

(26) *Whose did you recognize t wife's voice?

(27) *Whose wife's did you recognize t voice?

(28) Whose wife's voice did you recognize t ?

If we adopt the DP analysis, then this data becomes even more problematic. The problem arises from the extraction of the head of DP along with the specifier of DP. In these cases, the possessive morpheme *-s* is the head of DET. As it head-moves locally to [SPEC, DP] to cliticize, if the element it has cliticized to then extracts from DP, then we can conclude that the locality constraint on Head Movement has been violated. Thus ungrammaticality results when the trace of *-s* is not properly bound.

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[26]Strangely enough, the following seems better:

(i) Who did it bother his father that Ronnie was living with t ?

Upward Boundedness Constraint:

> No element that is moved rightward by a transformation may be moved out of the next higher node S.

(29) That a serious consideration of this problem could take place here was quite unexpected.

(30) That a serious consideration could take place here of this problem was quite unexpected.

(31) *That a serious consideration could take place here was quite unexpected of this problem.[27]

According to the analysis of the earlier chapters, this should only arise when the complement of a nominalization is extracted. In the examples above, the final, ungrammatical extraction can be subsumed under the sentential subject constraint in the terms of the definition of barriers given herein. Whatever the point of attachment of the extraposed PP, it would have to cross the CP barrier root of the sentential subject.

8.3.2.5. Tensed S and Specified Subject: The Opacity Conditions

> Tensed-S Condition: No rule may relate X and Y in the structure . . . X . . . [a . . . Y . . .] . . . where a is a tensed clause.

(32) It is likely that John will leave early.

(33) John is likely t to leave early.

---

[27] Consider, however, the following:

(i) ?That a serious consideration could take place of this problem was quite unexpected.

The presence of the adverb *here* is crucial to block the profligate case assignment of the verb *take place* to the extraposed PP.

(34) *John is likely (that) t will leave early.

In terms of movement, as illustrated in the examples above, we derive the tensed-S effects through the biunique case assignment property of finite INFL In the last example, *John* will receive NOM case twice, once through the trace, and once through the head of the chain. No barriers to movement are involved.

(35) John $_i$ believes himself $_i$ to be a genius.

(36) *John $_i$ believes himself $_i$ is a genius.

The binding theory yields the appropriate results with respect to these examples. The reflexive must be bound within its governing category, and it isn't.

The Specified Subject Condition: No rule may relate X and Y in the structure . . . X . . . [$_a$ . . . Z . . . W_1 Y W_2 . . .] . . . where Z is the subject of W_1 Y W_2.

(37) John believes Bill to expect Harry to leave early.

(38) *Harry is believed Bill to expect t to leave early.

(39) *John $_i$ believes Mary to like himself $_i$.

Both of these examples can be handled by the Binding Theory, assuming we treat NP-trace as an anaphor, which has to be bound in the minimal domain of a subject. The "specified subject" in both cases binds the anaphors, giving the wrong reading.

This definition makes the prediction that extraction from sentential complements occurring in specifier position will be ungrammatical. Consider the following:

(40) I told Jane that Bill would go.

(41) *Who did you tell Jane t would go?

(42) I promised Jane that Bill would go.

(43) *Who did you promise Jane t would go?

(44) I persuaded Jane that Bill would go.

(45) *Who did you persuade Jane t would go?

In all these examples, the only available reading is one in which "Jane" is the subject of the embedded clause, and not the object of the matrix clause.

Topicalization should also create islands, given this formulation, as they are adjoined to CP, and thus, by creating an adjunction structure, create an island.

This formulation of barriers manages to capture the island effects in an elegant manner, and provides a mechanism for the parameterization of barriers through the differing properties of lexical items in different languages. Further, it relates barriers directly to tree geometry by introducing the concept of barriers relativized by position.

Chapter 9. Syntactic Affixation and Case Transmission

The proper treatment of affixal verbs in Labrador Inuttut has been the topic of some debate. Grimshaw and Mester (1985) propose a treatment that is completely lexical. Woodbury and Sadock (1986) provide arguments for treating the derivation of these lexical items as in part extra-lexical (e.g. syntactic). In this section I provide a critique of the specific treatment of these verbs by Grimshaw & Mester (hence G&M) and further sketch a treatment that (a) is lexical in part and yet is not subject to the same faults as the G&M analysis and (b) is also syntactic in part, thus illustrating the possible interaction of matching and inheritance systems of morphology as proposed by Roeper (1987) (discussed in Chapter Two) and syntactic affixation as proposed in this thesis. In doing this I answer most of the points raised by Woodbury & Sadock (hence W&S) and provide accounts for some of the data they introduce as counter-examples to the G&M analysis. Further, this analysis does not require the dual representation of morphological and syntactic structure which Sadock's Autolexical Syntax account relies on. This analysis also goes further than that of G&M by providing an account of case assignment and agreement.

9.1. An overview of Labrador Inuttut

Labrador Inuttut (LI) is a dialect of Inuit Eskimo. Although the bulk of this chapter will concern itself with LI, data from Central Alaskan Yupik (CAY) and West Greenlandic (WG) will also be considered. These dialects are for the most part mutually intelligible and are substantively similar in their morphological rules. LI is ergative/absolutive in its case marking. That is, the subject of a transitive verb appears in the ergative case, while the subject of an intransitive verb and the object of a transitive verb both take absolutive case. Verbs either agree in person and number with their ergative and absolutive arguments (if they have an ergative argument) or just with their absolutive argument, in the case in which there is no ergative argument.[1] Word order is relatively free in LI, though the unmarked order is SOV. LI also displays pro-drop for both ergative and absolutive arguments (I refer to these arguments in this way, rather

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[1]The agreement markers are fusional/syncretic in character. A fact which may have interesting consequences for this analysis.

than calling them "subject" and "object" for reasons which I hope will become clear later). There is no evidence for the existence of the syntactic category VP in this language. The following examples illustrate some of these points.

(1) anguti-up annak taku-janga

man-ERG woman-ABS see-3s3s

'The man sees the woman.'

(Smith 1982)

(2) angutik tiki-vuk

man-ABS arrive -3s

'The man arrives'

In spite of this case marking system, G&M treat the underlying grammatical functional structure as being Subject and Object. The decision to use S and O as primitives in this language seems to derive solely from the choice of Lexical Function Grammar as the theoretical framework for the analysis. The identification of subject and object in this language seems to arise from a translation into English.[2]

LI has a productive passive suffix, alternatively *-jau / -tau*. Its effect is to reassign the ergative NP dative case, and to leave the absolutive NP alone.

(3) annak anguti-mut taku-jau-juk

woman-ABS man-DAT see-PASS-3s

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[2]This is the first of the flaws in the G&M analysis which result from an over-reliance on English as an expression of 'logical argument' structure. It is also perhaps as a result of this assumption that G&M are forced to forego an analysis of case assignment, as they will have to specify the conditions under which Subject is manifest in ergative as opposed to absolutive case.

'A woman is seen by the man.'

G&M provide the following passive rule:[3]

S -> OBL

O -> S

OBL CASE = dative

LI also has a productive antipassive affix, realized as either $\emptyset$, *-ji* or *-tsi*. Its effect is again one of case reassignment. The former ergative NP is assigned absolutive case, the former absolutive NP is assigned instrumental case. G&M provide the following antipassive rule:

O -> OBL

OBL CASE = instrumental

LI has some verbal suffixes that apply to verb bases but don't affect the valency of the verb, or its case marking potential. These affixes are probably best treated as aspectual in nature. They include *-guma* 'want', *-gasua* 'attempt to', *-gia* 'begin to', and *-gunna* 'be able to'.

(4) angutik tiki-guma-vuk

man-ABS arrive-want-3s

'The man wants to arrive'

(5) anguti-up annak taku-guma-vaa

man-ERG woman-ABS see-want-3s3s

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[3]Note they have no account of why the object, though promoted to subject, remains in the absolutive case.

'The man wants to see the woman'

Here, G&M again demonstrate a possible over-reliance on the translation to English. They assume that because *want* in English takes two arguments logically, so too must this. In their analysis of the example above, they claim:

> But whereas tiki-guma takes two logical arguments (a 'wanter' and an 'arriver'), tiki- is monadic. (1985 p.7).

There is no argumentation given in support of this claim, other than the translation of this LI sentence into English. As these affixes:

> . . . are syntactically simplex, involving no grammatical embedding or control (1985 p.8)

the null hypothesis, and the most elegant analysis, would treat them as only affecting the semantic and morphological representation of the verb. However, the G&M analysis of *-guma* type affixes is rather more complex. *-guma* adds a subject argument, which is bound to the original subject argument, the original subject is then deleted as a "side-effect of binding" (G&M p. 10).

G&M give the following formal statement of the *-guma* rule:

The *-guma* rule

V(S,...) -> V-*guma* (S,0,...)

y xy

where x = y

-kqu class affixes add an ergative argument to the argument structure of a verb which necessarily lacks an ergative argument. It can apply after a demotional rule such as passive or antipassive. Affixes of this type include: *-kqu* 'order to', 'want'[4], *-gi* 'consider', and *-ti* 'cause'.

(6) tiki-kqu-vauk

arrive-order-3s3s

He orders him to arrive.

(7) tiki-vuk

arrive-3s

He arrives.

G&M posit a *-kqu* rule which adds a subject, and demotes the old subject to object. G&M formulate this *-kqu* rule as follows:

The *-kqu* rule

V(S,...) -> V-*kqu*(S,O,...)

y xy

(G&M (21).)

G&M claim that there is much that is predictable about the behavior of these two affixes. The first is that they can only add a subject argument. In the case of *-guma* it is arguable that an argument is added at all. In the case of *-kqu* it is unclear why it should be considered a 'subject' argument (rather than an 'agentive' argument, or even an 'ergative' argument). They claim further that since the original subject (that of the base) can no longer be the subject due to the

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[4]Thus Eskimo distinguishes a morphological desiderative "want" from a syntactic "want X to".

Functional Uniqueness Principle which operates as a filter on lexical representations, there are "universally" only two options open to this subject. In the first option, the *-guma* case as they present it, the original subject is bound to the new subject and is then deleted, in the second option, their *-kqu* case, the original subject is assigned a different grammatical function; in this case, object. Given this universal list of options, G&M reformulate *-guma* and *-kqu* in a simpler format:

The *-guma* rule: Add x, bind

The *-kqu* rule: Add x, reassign GF.

Note that the reassignment of GF referred to above is only apparent upon the translation of LI into English.

9.2. A Syntactic Analysis

If we are to retain our commitment to treating transparent affixation as a syntactic operation, then this data faces us with several problems. First, is there sufficient evidence for an Agreement Phrase (that is, a syntactic projection of an AGR head) in the Eskimo languages? Agreement affixes form a complicated system of markers, encoding roughly both subject and object. However, the two argument positions coded for are syncretized, and are further syncretized with some tense/aspect information.[5] So, for example, the suffix *-janga* codes third singular subject, third singular object and present indicative tense. Further, it is not strictly true to say that agreement codes subject and object, rather, agreement codes the absolutive case-marked argument of the verb, and any ergative case-marked argument of the verb. Due to the possibility of application of GF changing rules such as passive and antipassive, as well as complex verb formation, which adds an external argument, the NPs agreed with need not in any way correspond to 'deep subject' and 'deep object'.

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[5]An alternate analysis would be that there are different sets of agreement morphemes associated with different tenses, as is clearly the case in, for example, Georgian. The tense is then indicated by the choice of agreement morphemes, but has not actually syncretized with these morphemes. In terms of the theory, this could be a relfection of the selection of a particular type of AgrP by the head TENSE which governs it. If this can be shown to be the case, then an analysis involving AGRPs could be advanced for Eskimo.

9.2.1. The Interaction of Case Assignment and Agreement

Note further that ABS case is manifested by "zero-marking". That is, there is no overt morpheme acting as ABS case-marker. There is a general tendency in the languages of the world for nominative and absolutive case to receive zero-marking. Some traditional accounts of morphology posit the existence of an empty morpheme fulfilling this case-marking role. However, that sort of analysis does not explain why cross-linguistically it is these two cases, in their respective case-marking systems, which are zero-marked. Theoretically, any case could be manifested by a zero morpheme, if zero morphemes are to have equal status at the paradigmatic level with the other, phonologically overt, case morphemes. The proposals put forward in this thesis militate against the existence of zero morphemes at the level of syntactic affixation, and thus an alternative analysis must be found. Let us consider whether we can distinguish different types of case-marking. Several different typologies of case-marking have been proposed. Already, we have considered the distinction between biunique case-assigners, such as NOM by INFL in English, from profligate case-assigners, such as ACC by verbs in English. Note further that the position of ABS in LI is similar to that of NOM in English. It is necessary for every sentence to contain an ABS-marked referential expression, and further, as noted by Bittner (1988), the ABS NP takes wide scope over any ERG NP in the interpretation of Eskimo sentences.[6] Let us propose that ABS in Eskimo languages, and NOM in English, are the product of bi-unique case assignment (there is necessarily one and only one NP so marked in every sentence) by a non-lexical item (in both cases, INFL).[7] This case-marking by

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[6]This parallels the situation with nominative case in English, where nominative-marked elements (subjects) take wide scope. Whether this property is due to the existence of a distinguished position (subject) or a distinguished case (the zero-marked case), is not clear. Consider however, the case of German. In German it is the accusative case which displays "zero-marking". A fact which might lead an adventuresome linguist to conclude that German is an ergative-absolutive language. Taken in concert with the propensity for non-agentive subjects to appear in oblique cases (*Es tut mir leid*, etc.), one might conclude that German is an ergative-absolutive language with split intransitivity, coding agentive subjects with NOM (or ERG), and undergoer subjects with an oblique case (usually dative).

[7]The assumption here that INFL is a non-lexical category, and more importantly, part of Universal Grammar, appears to be in contradiction to the analysis proposed in an earlier chapter. However, this distinction of INFL can be maintained by treating it as a lexical

a non-lexical item is not case-marking per se, but rather the coindexation of a distinct NP with the INFL head. This coindexation allows the NP thus marked to avoid the case filter, but the NP does not receive any overt case marking.[8] Thus, semantically, the interpretation of the syntactic projection of INFL will accord wide scope to any NP coindexed by INFL in this way. This coindexation may also allow the ABS argument to be properly governed by INFL. If this is the case, this would account for the restriction of relativization in Eskimo to ABS arguments (Keenan 1985).[9]

The Eskimo languages then differ crucially from other ergative/absolutive languages, such as Warlpiri, which demonstrate split ergativity, in that the agreement morphemes on the auxiliary code subject and object, i.e. NOM and ACC. The analysis proposed here thus implies that Warlpiri is not showing split ergativity, but that the failure of agreement and case-marking to correspond exactly arises from the fact that case-marking is distinct from the operation of the Projection Principle, which in Warlpiri is satisfied by the pronominal arguments on the AUX, i.e., the "agreement affixes" (cf Jelinek 1984). Interestingly enough, no case of split ergativity operating in the other direction is attested[10]. That is, no known language shows NOM /ACC case marking on overt NPs, and an ERG/ABS agreement system.

In her 1984 paper, Jelinek proposes the identification of a subset of languages with null anaphora, which she labels the Pronominal Argument languages. These languages show

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category as long as it is assumed to have a distinguished role, in this case, the determination of scope of its coindexed argument.

[8]It would be interesting if we could show that it is only biunique case assignment by a non-lexical category that results in this sort of coindexation and lack of overt morphemic realisation of case. Thus English would contrast, for example, with Russian in which NOM case has an overt marker, and sentences with two nominative marked NPs in apposition (*Ja studentka*), or no nominative NPs (*u menja dasha, mne xocitsja masha*), are possible. It could be that the requirement for a copular verb in English arises from this lack of overt morphemic realization of NOM.

[9]Other languages which have this feature are K'ekchi (Mayan; Berenstein 1977), Dyirbal and Yidin (Australia; Dixon 1972), and Eskimo (Creider 1977).

[10]Dixon (1979) lists Walmatjari as having an entirely accusative syntax although NPs are marked in an ergative case pattern. It is considerably rarer to find a language, such as Mam, which has predominantly ergative syntax (England 1983).

certain diagnostic criteria, including AUX-second. In her analysis of these languages, Jelinek argues against both the lack of syntactic application of the Projection Principle (as put forward in Hale 1983) and the existence of pro in these languages. Rather, she claims that the agreement markers are themselves incorporated pronouns, and thus are the arguments of the verb required by the Projection Principle. The data considered thus far from Labrador Inuttut suggests that it may be a true null anaphora language. The agreement markers in LI cannot function as pronominal arguments if it is truly the case that they have syncretised, including both ABS and ERG agreement, with the categorially incompatible element tense.[11]

Let us suppose for the time being that the Lexical Clause Hypothesis holds for the Eskimo languages.[12] Thus, the logical subject (or AGENT) arises in [SPEC, VP], and the logical object (or PATIENT) arises as sister to V. The position of subject then is not a matter of a dedicated syntactic position (i.e. [SPEC, IP]) but simply of the association of a particular VP-internal position with the assignment of the AGENT theta-role. The Uniformity of Theta-Assignment Hypothesis (UTAH, from Baker (1988)) requires such a linkage of position with identity of theta-role assignment to exist.

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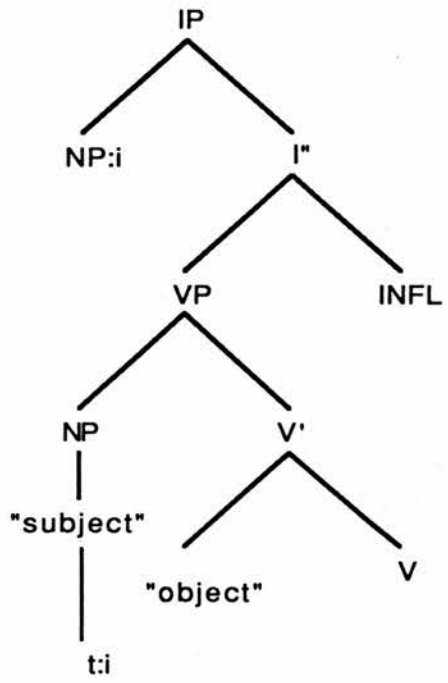
[11]On the other hand, if it is only the agreement markers which have syncretized, with their particular morphology selected by tense, then the evidence that Eskimo languages are true null anaphora languages is not quite so strong.

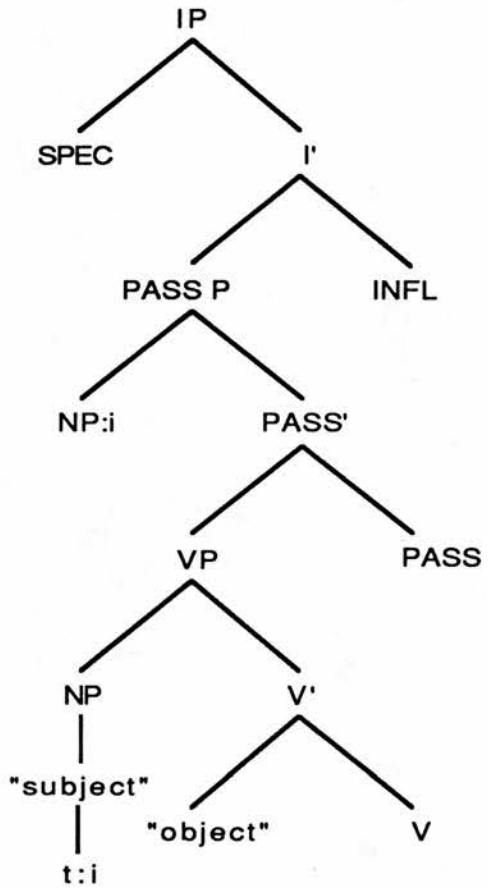
[12]There is an interpretation of the Lexical Clause Hypothesis in which it corresponds to the claim that there is no syntactic VP, at least at D-Structure. If the subject arises in [SPEC, VP], then arguably the subject occurs inside of VP, as does the object. Further, the theta-assignment to the subject can then be direct, rather than indirect, as the subject is not realized, at D-Structure, external to the maximal projection of V.



Let us propose further that V is a biunique case-assigner[13], able to assign ABS case in two ways; either under government, in the case of direct objects, or through SPEC-head coindexing. If the verb is intransitive, then the verb assigns ABS case to its SPEC position. There is no ordering necessary as to where the verb assigns the unique ABS case. If the deep subject in [SPEC, VP] receives the ABS case and the verb is transitive, thus having an object, that object is not case-marked, and thus the Case Filter is violated and the sentence is ungrammatical. Assume further that the "subject" NP must raise to a position of case-assignment. As in some analyses of English, we can assume that INFL assigns case (ERG here) to its SPEC position. Unlike English, however, this assignment of ergative case is not bi-unique. Neither is it profligate. Rather, it incorporates features of both types of case assignment. It need not be assigned (as in the case of

[13]This contradicts our earlier suggestion that ABS was assigned by the non-lexical category INFL. I return to this alternative possibility in a later section.

profligate case-assigners) but if it is assigned, it can be assigned only once (as in the case of bi-unique case assignment)[14]. Now let us consider the GF-changing rule of Passive.



In the case of passive, the case-marking pattern observed is that the deep object receives ABS case, while the deep subject receives DAT case. In this analysis, as deep subject must raise in order to receive case, it raises then to [SPEC, PASSP]. The passive morpheme is a biunique case

[14]This suggests that these types of case-assignment are actually further reducible to a featural analysis involving the features [+/- UNIQUE] and [+/- NECESSARY].

assigner, of DAT case, which it assigns to its SPEC position. The deep subject is prevented from moving further into [SPEC, IP] by the barrier-to-movement PASSP.[15]

Now let us consider the case where antipassive applies. Remember that antipassive has two manifestations in these languages, either by a zero morpheme, or by *-jau* or *-tau*. According to the PFLP and our definition of syntactic operations, the zero morpheme cannot represent an element visible to the syntax (i.e., having a syntactic projection). Thus zero-marked antipassive must be a lexical operation. Some Eskimoicists have captured this fact by suggesting that a verb can vary between ERG/ABS and ABS/INST case-marking patterns. Antipassive marked overtly does, however, represent a syntactic operation. Note further that this predicts that in the case of rule interaction, zero-marked (lexical) antipassive can only feed other GF-changing rules. In case it is fed by Passive and *-kqu* affixation, for example, it must, according to this analysis, be overtly marked by an antipassive suffix. The prediction, then, is that zero-marked antipassive (or passive) can only arise with simple verbs, not derived or complex verbs.

Lexical antipassive then results in the verb being able to assign both the bi-unique ABS case to its SPEC position, and a unique non-profligate INST case to its object. This analysis is thus similar to dative shift in English, the verb either assigning both objects ACC profligately, or assigning oblique case by means of a PP.[16] Before we can consider syntactic antipassive, we must

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[15]It is not necessarily the case that PASSP should be a barrier to movement, given the definition of barrier proposed in Chapter Eight. If we do assume that Eskimo is a null anaphora language, and thus that there must, at least, be empty pronominals coindexed with case-assignment external to the verb, then the case-assigning property of PASS will ensure that if the subject does raise further, it will be doubly case-marked, and thus violate the Case Filter, even if non-overt. This account, however, depends upon assuming the second analysis proposed in which ABS case is assigned by INFL. Alternatively, if [SPEC, IP] is not a position of case assignment, then the subject may be case-marked by PASS, and then vacuously raise to the higher position. The relatively free word order of the Eskimo languages perhaps suggests that such movement is fairly unrestricted, provided the case-assignment properties of the verbs, and the Case Filter, are satisfied.

[16]This would predict that INST case-marking might arise in other situations when it lacks the semantic property of instrumental, and only serves to provide case-marking to avoid the Case Filter. But, we would not expect it to pattern like *to* in English, the preposition of oblique case-

create a situation in which it can arise. This can only occur following an operation removing the ERG case assignment (such as passive)[17] and the suffixation of a higher predicate such as *-kqu* which adds an external argument.

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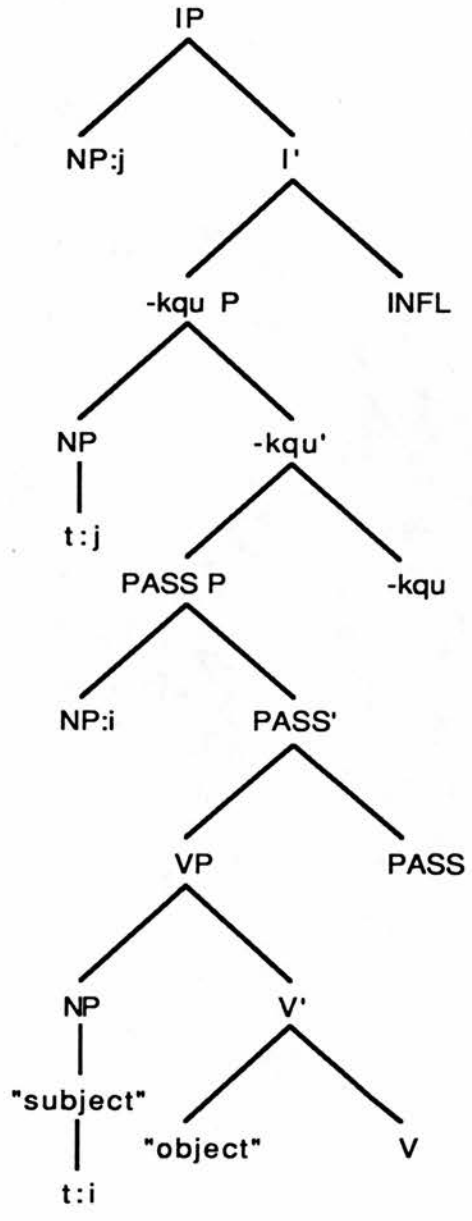
marking in Dative Shift, as it does arguably have some semantic content, rather it should pattern more like *of* in nominalizations.

[17]And of course, *-kqu* affixation can apply to any intransitive VP, as no conflict with the Case Filter will arise in that case.



Thus the deep object receives ABS case from the verb. The deepest (or internal) subject receives DAT case from the passive morpheme, and the argument added by *-kqu*, the "wanter" or

external subject, receives ERG case by raising into [SPEC, IP].[18] If *-kqu* takes as complement a transitive VP which has not undergone passive, then the Case Filter will be violated, as ERG can only be assigned once and the sentence will be filtered. Now we are in a position to consider syntactic antipassivization. Let us consider an extension of the above, a verb which has undergone passive, *-kqu* affixation, and then antipassive.

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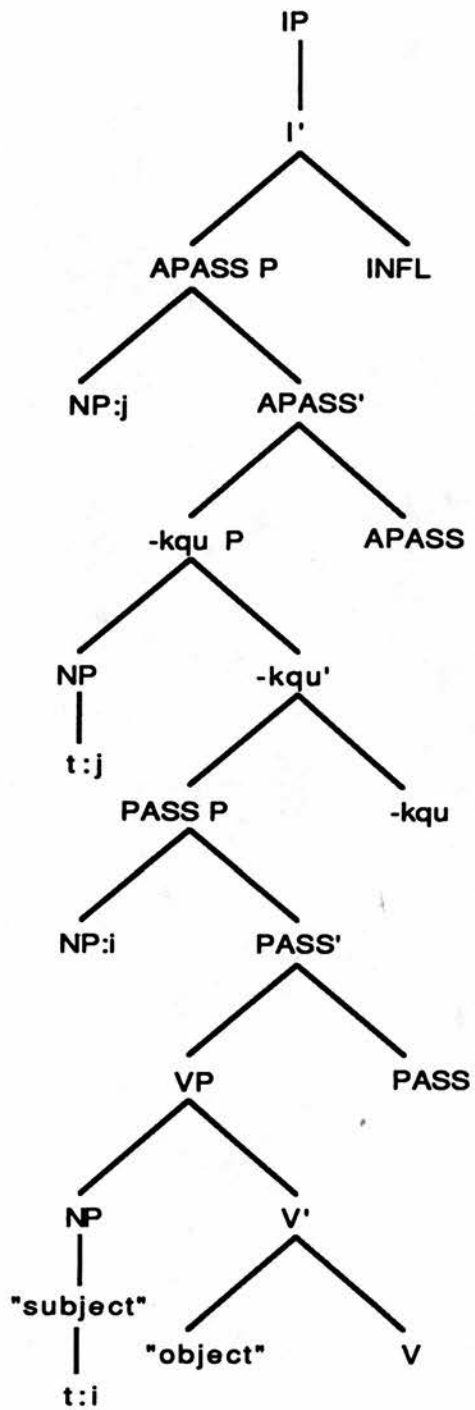
[18]Note that I have waffled a bit in just calling the syntactic projection of *-kqu* a *-kqu* P. This corresponds to an analysis in which *-kqu* is a verb which takes a VP complement, PASS P being a sort of VP. This is similar to the analysis of causatives in Li 1990. I return to issues raised by his analysis in a later section.


IP
I'
APASS P
INFL
NP:j
APASS'
-kqu P
APASS
NP
-kqu'
t:j
PASS P
-kqu
NP:i
PASS'
VP
PASS
NP
V'
"subject"
"object"
V
t:i

The highest NP, subject of *-kqu*, can raise to [SPEC, APASS], however, this is not a position of case assignment. Movement to a higher position, [SPEC, IP] is blocked by APASSP, a barrier to movement. Thus the highest NP cannot receive case. However, recall that the verb is able to assign ABS case to either its sister, or to its SPEC position (as in the case of intransitives). If we further assume that case is assigned after verb raising, through the verb trace, and that any trace of the verb is capable of transmitting ABS case, then if the verb has employed the optional ABS INST case-marking pattern, and assigns INST case to the deep object, then ABS case is still available for the verb to assign to the highest NP either when it is adjoined to *-kqu*, or in the case where the NP has raised, when the verb is adjoined to APASS. However, note that we have had to invoke lexical APASS in our analysis of syntactic APASS. This is necessary in order to accomplish the correct result. We must posit the existence of the syntactic projection of the overt antipassive morpheme for two reasons, (i) we are forced to by a strong version of our co-equation of syntax with affixation. As the antipassive morpheme appears outside morphemes which clearly have syntactic projections (*-kqu* and passive), we must either allow this syntactic projection in order to avoid an ordering paradox (syntactic rules feeding lexical rules) or posit a much more complicated interaction of syntax with morphological rules than is desirable, and (ii) we require the syntactic projection of APASS to act as a barrier to the upward movement of the highest NP to a position where it could receive ERG case.[19] It is this latter reason which provides the most compelling explanation. Antipassive is a syntactic rule which can freely apply to the verb. If it applies directly to a verb stem then a syntactic structure is generated which is lacking in syntactic affect.[20]

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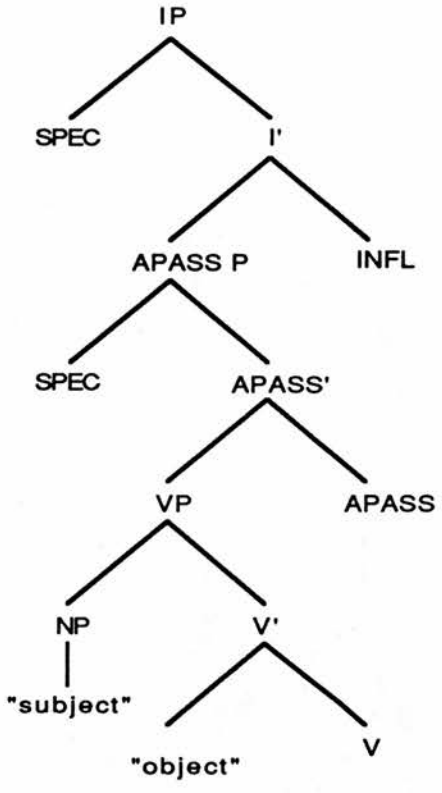
[19]Again we have had to invoke barrierhood for APASSP. It could be that in Eskimo languages INFL is not a lexical category, and thus doesn't L-select its complements, thus rendering them barriers to movement. This could be derived from the degenerate nature of INFL, including its syncretism with the agreement morphemes.

[20]One further possibility is that the overt APASS morpheme is some sort of subtle aspect marker, which just happens to have the same syntactic effect as the lexical antipassive.



The verb raises through APASS to adjoin to INFL. The deep object receives INST case from the verb trace, the deep subject receives ABS case from the verb trace.[21]

Verb or verb-trace (at any level) must assign ABS (to sister or specifier) unless the NP is otherwise case-marked. No ordering is required here. If the verb-trace case-marked an NP in [SPEC, PASSP] for example, the biunique case-assigning property of the passive morpheme would be violated, and ungrammaticality would result as it would be unable to discharge DAT into its SPEC position.[22]

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[21]The deep subject can vacuously move to [SPEC, APASSP] and be assigned ABS case by the verb trace adjoined to APASS.

[22]We could tell a story by which the verb-trace is unable to assign ABS case when it is adjoined to a case-assigner, such as the passive morpheme. At the point of adjunction when the verb-

Let us now consider whether we can recast this analysis in a way which allows our earlier generalization to go through, that is, whether we can alter the analysis so that it is INFL which assigns ABS case, not the verb-trace. Assume that the verb-trace must be the mechanism for the assignment of ABS, as only it will occur in the appropriate structural positions for the variety of examples of ABS case assignment demonstrated. However, we could claim that the verb trace merely transmits ABS case from INFL, which arises from the ultimate adjunction of the verb (and any other movable heads) to INFL. This analysis raises two questions: (i) how is INST case assigned, and (ii) how is ERG case assigned. Assume that our analysis for INST stands, the verb or its trace itself assigns INST in a unique non-necessary manner. As for ERG, we could claim that INFL assigns ERG in a unique non-necessary manner to its SPEC position. This results in an analysis in which INFL has both a head, or internal, case to assign (ABS) transmitted by the verb and its trace, and an external case assigned by INFL to its SPEC position (ERG). Alternatively, we could allow further movement of the potentially ERG marked NP to [SPEC, CP] and allow COMP to assign ERG case to its SPEC position. If we follow this latter analysis, we then have a partial explanation for why ERG case is assigned to particular verbal arguments (necessarily an external argument) and also as the case-marker for possessors. That is, ERG is the case assigned to [SPEC, NP] and [SPEC, CP]. If [SPEC, CP] is a position of potential case assignment, then we would predict that these languages show no WH movement to this position in the formation of questions. This appears to indeed be the case.[23]

This analysis then requires the existence of pro in Eskimo. This coincides with the evidence which we considered earlier which seemed to indicate that Eskimo languages are not pronominal argument languages. If this is true, then the agreement demonstrated is true agreement. This would in part explain why it is syncretized both for ERG and ABS argument,

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trace is in a position to assign ABS to [SPEC, PASSP], its head is the passive morpheme, and thus the case-properties of the head must take precedence over those of an adjunct.

[23]This analysis is sympathetic to the position that ergative case marking patterns have arisen typologically as a form of grammaticalization of a topic position, perhaps only in topic prominent languages. It also provides an explanation of why absolutive nominals take wide-scope in Eskimo over ergative nominals. Further, it is consistent with positions (similar to Marantz 1984) which consider absolutive nominals to be subjects, and ergative nominals to be a sort of super subject.

and for tense. Now, the question arises, why is agreement tied to these particular case-marked NPs, and not with some other arbitrary pairing of cases? Or with only one of the cases, rather than both? This could be as a result of the manner in which ERG and ABS are assigned, that is, because ERG and ABS code sentence-basic case marking.[24] The other cases are assigned by lexical categories. This then suggests that our analysis in which ABS is assigned by INFL is the preferable one. Then the cases assigned non-lexically, ABS and ERG, are those that trigger agreement. This agreement can function through coindexing under case-assignment.[25]

9.3. Extensions to the Data Covered

In their reply to G&M, Woodbury and Sadock (1986) raise two different issues. The first concerns the strength of the lexicalist hypothesis, and the structure preserving constraint. I will not discuss that issue here. The second issue which they raise has to do with the ability of the G&M analysis to extend to other sorts of data. I address this issue now, in an effort to demonstrate that the analysis which I propose in the preceding section is able to extend to cover the sorts of data W&S introduce.

W&S argue that the G&M analysis fails such an extension test. In particular, they argue that noun incorporation in West Greenlandic can not be so treated.

9.3.1. Saturating Relation-Changing Affixes: Noun Incorporation

In this analysis, the noun-incorporation affixation is a fundamentally syntactic rule. Thus we will adopt what is essentially the analysis proposed by Baker (1988). This analysis is supported by the observation that the incorporation of the object has the same effect on the case marking of the argument NPs as the antipassive operation. That is, the agentive NP appears in the absolutive case, and the incorporated noun transmits instrumental case to any remaining elements of its NP. As has been noted by many researchers (see, for example, Mithun 1984), it is

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[24]Here we must assume that *-kqu* is not a case-assigner. This is in part substantiated by the fact that it cannot appear without a "host" verb.

[25]Here we may then predict that INST case will only be assigned by the "original" verb trace, the termination of the chain.

typically the "direct object" NP, or rather the undergoer of the action of a two-place predicate, that can be incorporated. Subjects, or agents, are seldom if ever incorporated. However, as we will see, Eskimo languages show several unusual properties in this regard. Baker only allows head movement into a position which properly governs it. This in itself serves to prevent the incorporation of true subjects as they never arise properly governed by the verb stem. However, evidence also exists which suggests that the incorporation shown in Eskimo languages is not true noun incorporation (Mithun 1986) but involves rather the incorporation/affixation of a degenerate verb stem into a noun. I return to this other possibility in a later section. For the time being we will treat it along the lines of Baker's analysis of noun incorporation and reserve any doubts we may have.

Let's see how this works. Consider the following examples from W&S (their 17 & 18) repeated again below with their respective tree diagrams:

(8) tuttu-p neqa-a

reindeer-ERGs meat-3sP

reindeer('s) (its) meat

(Rischel 1972)

(9) Tuttu-p neqi-tor-pu-nga

reindeer-ERGS meat-eat-IND-1s

I ate reindeer('s) meat.

(Sadock 1980)

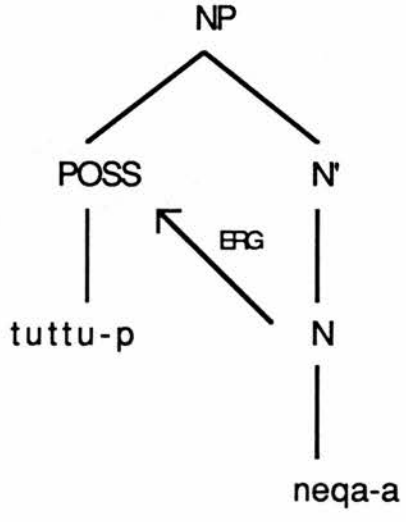
(10) Suulu-p Inooraq tuttu-p neqi-to-rqu-a-a.

Sullu-ERGs Inooraq-ABSs reindeer-ERGs meat-eat-ask-IND-3s3s

Suulut asked Inooraq to eat reindeer meat.

(Carolyn Jenkins, 1985, fieldnotes)

We see from the examples above that the possessor argument of an NP appears in the ergative case. The NP *neqa* 'meat' assigns ergative case to its POSSNP argument, and agrees with it in person and number. Let us assume that DET is not a lexical head in Eskimo, that possessors arise in [SPEC, NP], and that they receive case from the head N. Further, the Eskimo languages are head-marking languages (Nichols 1986). Thus the head noun agrees in number with its possessor. This is achieved through SPEC-head coindexing. We note that the case assigned to possessors (genitive case) is morphologically identical with ERG. We have provided a partial explanation for this in the preceding section. Let us further note that this is a cross-linguistically common conflation.



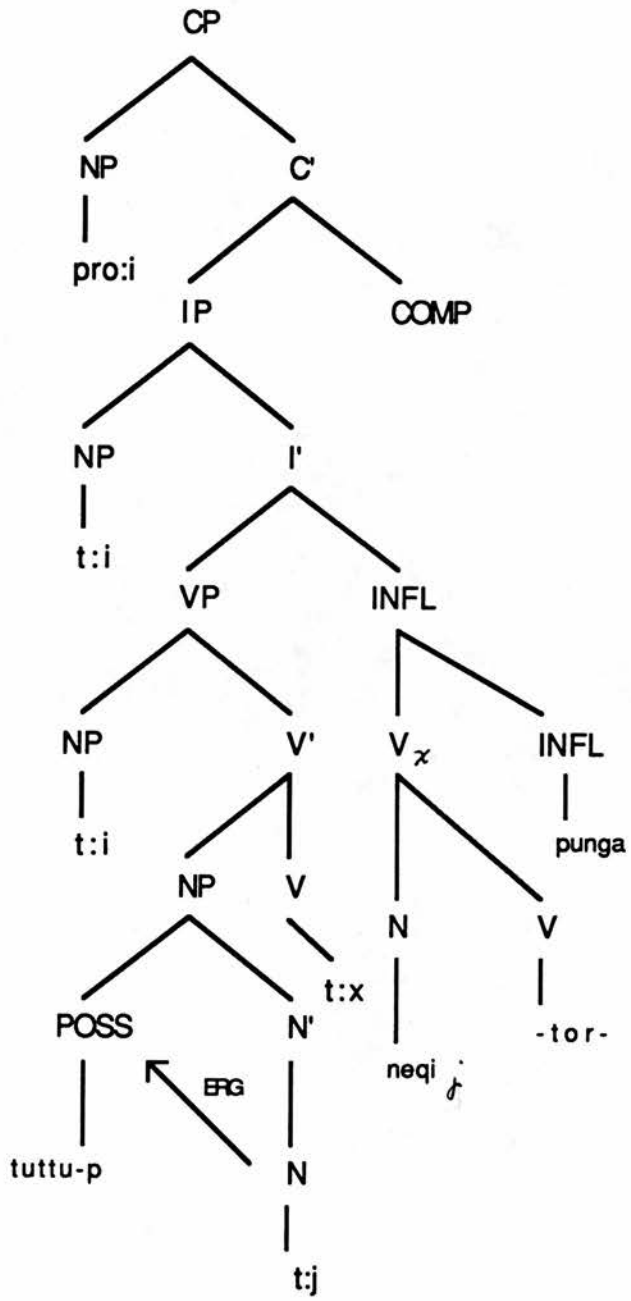
(11) tuttu-p neqa-a

reindeer-ERGs meat-3sP

reindeer('s) (its) meat

(Rischel 1972)

In the example above we see a sentence illustrating noun-incorporation. Let's look at how this analysis would build up the complex word *neqitorpunga*.



(12) Tuttu-p neqi-tor-pu-nga

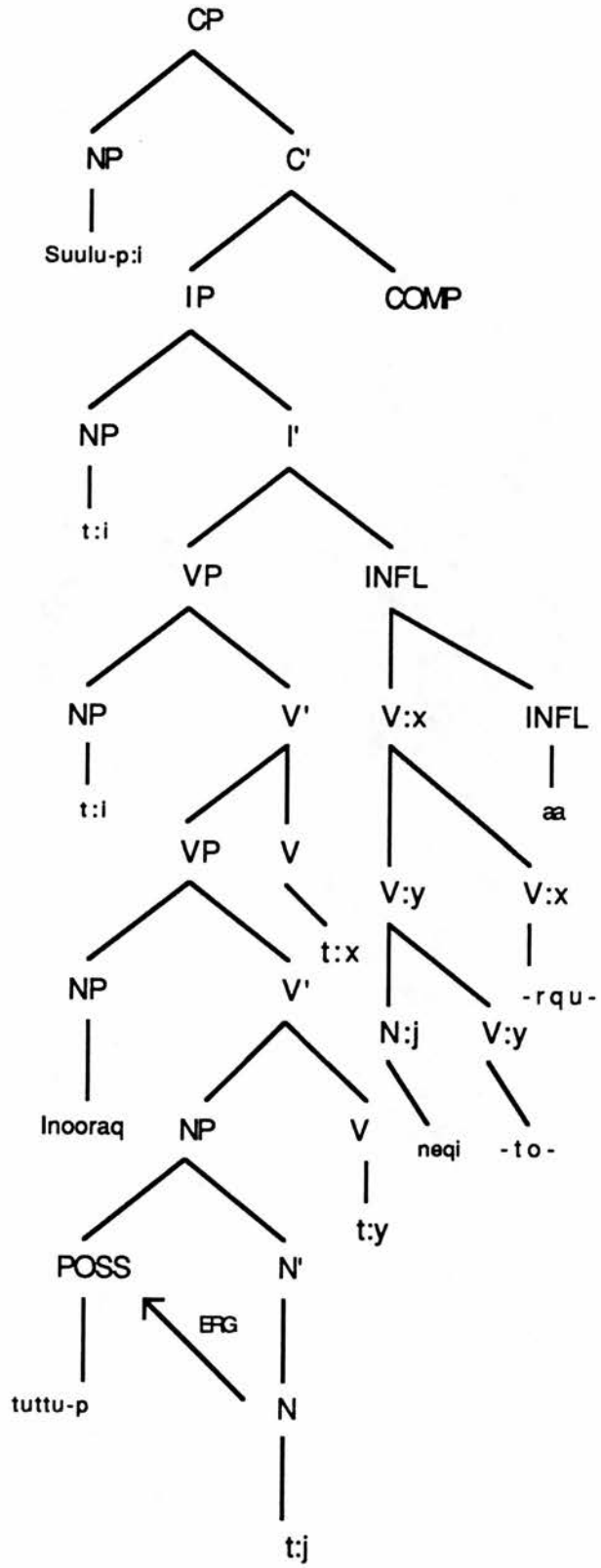
reindeer-ERGS meat-eat-IND-1s

I ate reindeer('s) meat.

(Sadock 1980)

The head noun *neqi* has incorporated into the V that governs it, *-tor*. The complex verb *neqitor* then adjoins to INFL. Because ERG case is assigned to possessors structurally/inherently, the N-trace assigns ERG to *tuttu*. All head movement is then strictly local.

The tree for the complex sentence from above is given below:


CP
NP
C'
Suulu-p:i
IP
COMP
NP
I'
t:i
VP
INFL
NP
V'
V:x
INFL
t:i
aa
VP
V
V:y
V:x
t:x
NP
V'
-rqu-
N:j
V:y
Inooraq
NP
V
neqi
-to-
t:y
POSS
N'
ERG
tuttu-p
N
t:j

(13) Suulu-p Inooraq tuttu-p neqi-to-rqu-a-a.

Sullu-ERGs Inooraq-ABSs reindeer-ERGs meat-eat-ask-IND-3s3s

Suulut asked Inooraq to eat reindeer meat.

(Carolyn Jenkins, 1985, fieldnotes)

This gives us exactly the structure we want. There can be two ergative NPs in the sentence because only one of them is modifying the verb, *Suulup*. W&S are somewhat misleading when they consider the possessor NP in the ergative case as an argument of the verbal.

> Very superficially, in (17) we have an ergative case argument even though the derived verb *neqi-tor-* "eat meat" is intransitive; this would seem to violate Structure Preservation since no simplex instransitive verb in the language takes an ergative case argument and since the ergative case never marks oblique arguments. Example (18), with two ergative case arguments, would appear to violate both Functional Uniqueness and Structure Preservation. In syntactic treatments, suffixes like *-tor* "eat" in (17b) and (18) have instead been treated as affixal verbs taking a complement that is logically an instrumental case object, an analysis motivated by the fact that modifiers of the incorporated head remain in the instrumental, as shown in (19). (W&S page 237):[26]

Outside modifers of incorporated nouns are in the instrumental case in the analysis developed above because of the nature of ABS and INST case assignment. I reproduce here their (19).

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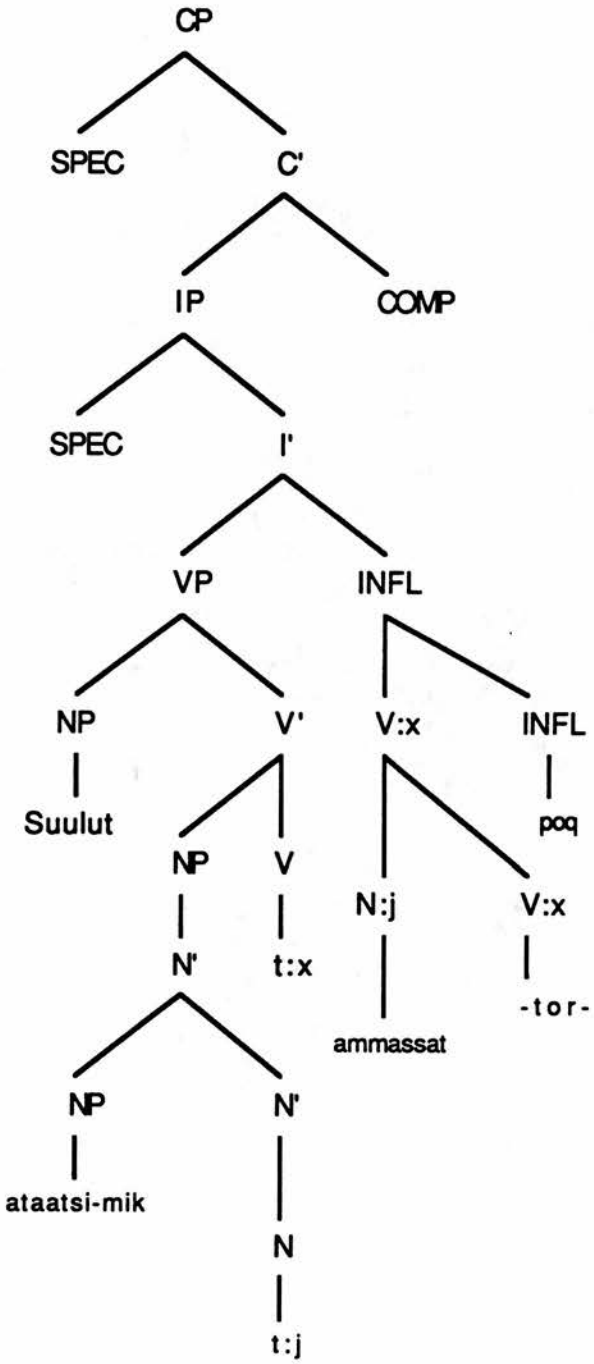
[26]Note that the possible existence of two ergative arguments allows for ambiguity. The following example is taken from Fortescue (1984 p. 93).

(i) palasi-p gimmi-a taku-aa

priest-ERG dog-her see-3s3sIND

'The priest saw her dog' or 'She saw the priest's dog'.



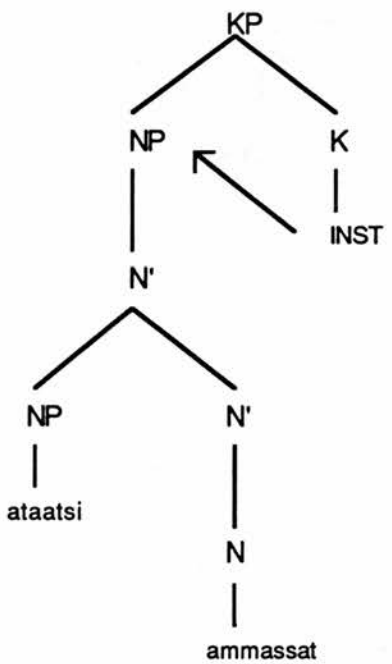
(14) Suulut ataatsi-mik ammassat-tor-poq

Suulut-ABS one-INSTs sardine-eat-IND3s

Suulut ate one sardine.

(Sadock, fieldnotes)

Because ABS case is assigned by INFL through the verb trace, it cannot be assigned to a noun incorporated into the verb, and thus adjoined to INFL, because of the i-over-i constraint on coindexing. Thus the only grammatical case-marking that can be displayed is ABS assigned by the INFL-V-trace complex to [SPEC, IP], and INST case assigned by the original verb trace. This leaves open the question of why the case-marker doesn't appear on the incorporated noun, but only on any non-incorporated elements of the NP. Consider the following tree. We will consider here a more detailed NP structure, in which case is represented.



Assume that in languages with morphological case, the Case Phrase (KP, to distinguish it from CompP) exists as a syntactic projection of case. In some M-case (morphological case) languages, the case marker appears only once on a case-marked NP. In other languages, the case marker spreads throughout all maximal projections dominated by the case-marked NP. This is a form

of morpheme harmony.[27] Thus it is the NP which is case-marked by the verb-trace. This case is manifested on the appositional adjectival NP "one". But it is not manifest on the incorporated head, as the case marker is a functor over phrases, and not heads. Why, nearly universally, incorporated nouns have no affixes, (or rather, only roots are incorporated) arises from the principles of head movement. As case-assignment takes place at S-Structure, and head movement is a mapping from D-Structure to S-Structure, case assignment cannot occur until after head-movement has created certain S-structures. Thus no morphemes introduced dependent on S-Structure configurations, such as this sort of structural case-marking, can undergo head movement.[28]

W&S provide data from WG showing control of reflexives . Here follows their (20a&b):

(15) Isuma-mi-nik oqalug-poq

mind-3refl-INSTs speak-IND3s

'He speaks his own mind/thoughts'

(16) isuma-mi-nik oqalo-rqu-va-a

mind-3Rs-INSTs speak-order-IND-3s3s

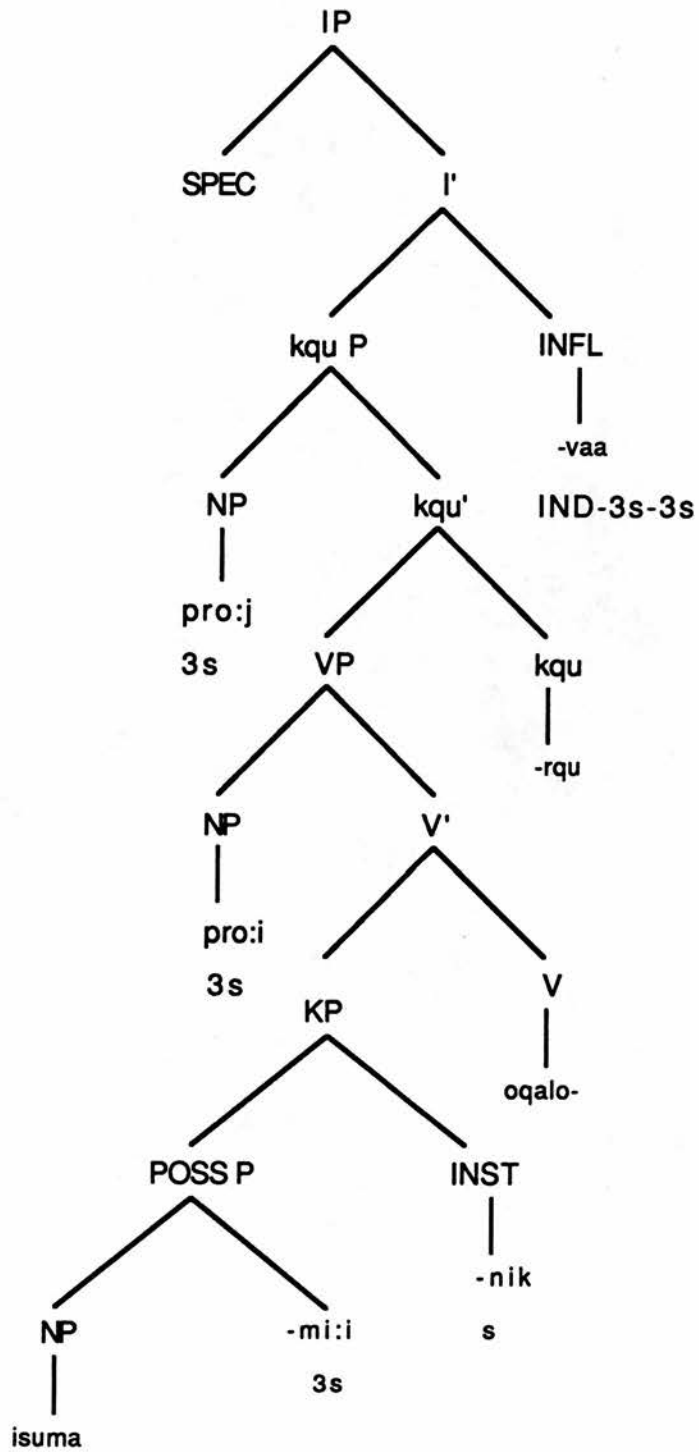
'He orders her to speak her (*his) own mind/thoughts'

---

[27]Morpheme Harmony also appears as subject agreement on serial verbs in Piapoco, as seen in Chapter Seven.

[28]This leaves us with the question of why inherently case-marked NPs can't incorporate. If semantic case is assigned at D-Structure, then if a noun bearing this sort of case-marking was in the right structural position, it should be able to incorporate into a governing verb, case-affix and all. This situation doesn't arise, generally, as most languages use semantic case marking only for arguments which are not directly theta-marked by a verb, and which are thus not directly governed by the verb. Further research is necessary to see if a language can be identified which has purely inherent case-marking, to see if case-marked noun incorporation is possible.

W&S argue that this "object" control of the reflexive distinguishes derived verbs from simplex verbs in this language, which otherwise always exhibit "subject" control. Syntactically, the reflexive must be bound within the minimal domain of a subject, in this case, the subject in question is the null pronominal associated with the agentive argument of *oqalo*, 'speak', in [SPEC, VP].


IP
SPEC
I'
kqu P
INFL
-vaa
NP
kqu'
IND-3s-3s
pro:j
3s
VP
kqu
-rqu
NP
V'
pro:i
3s
V
KP
oqalo-
POSS P
INST
-nik
s
NP
-mi:i
3s
isuma

Recall that the KP is not visible at D-Structure.

This account predicts that when instrumental case-marked NPs occurred not through antipassive case marking of arguments, but as adjuncts, their control, if R-marked, would be ambiguous. This is indeed the case, as shown by the following example from Fortescue (1984):

(17)	Aalu-p	Pavia-mut	Suulut	savim-mi-nik	kapi-qqu -aa
	Aalu-ERG	Pavia-DAT	Suulut-ABS	knife-3R-INST	stab-tell-3s3sIND

'Aalut told Pavia to stab Suulut with his knife'

Fortescue writes:

> This last sentence is ambiguous as to whether the knife is Aalut's or Pavia's. The ordering *Aalup savimminik Paviamut Suulut kapiqquaa* indicates less ambiguously that it is Aalut's knife. . . If it was Suulut's knife in either sentence *savik* would take 3rd person possessed inflection. (1984 p 144-145)

Referring to data from Central Alaskan Yupik, W&S (p. 238) use the ordering properties of:

> sentential suffixes - marking tense, negation, and various epistemic and mood categories

as another argument against the lexical analysis of G&M. W&S point out that generally sentential suffixes (that is, suffixes realizing tense and finiteness) must follow all other suffixes, except for the agreement suffix. However, there are three suffixes of the *-kqu* class of valency changing suffixes which can follow these tense suffixes. I reproduce W&S's examples below and show how this ordering property of suffixes is dealt with in this analysis.

(18) Atanqe-ssu-llru-at-gen

wait.for-want-PAST-IND-3p2s

They wanted to wait for you.

(19) *Atanqe-llru-yug-aat-gen

wait.for-PAST-want-IND-3p2s

They wanted to have waited for you.

(20) Cug-nun atanqe-ciq-ni-llru-a-ten

Person-DATp wait.for-FUT-say-PAST-IND-3s2s

He said that the people will wait for you.

The first example illustrates a tense suffix *-llru* suffixed following a *-kqu* class suffix. The next example illustrates an ungrammatical example where a *-guma* class aspectual suffix has suffixed following a tense suffix. The last example illustrates a grammatical sentence where the tense suffix is followed by an affix ostensibly of the *-kqu* class. Our analysis will extend neatly to cover this data if we just assume that *-ni* 'say', takes not a VP, but an IP complement.[29]

In further data from Central Alaskan Yupik, W&S discuss the existence of a causative transitivizer suffix *-te* (*-t(e)* in Inuit) which distinguishes between intransitive bases and derived intransitives (e.g. a stem having undergone passive or antipassive) and thereby provides another argument against G&M's lexical analysis. That is, it applies to a verb stem, but not to a derived verb. This is the sort of effect we would expect to see if syntactic subcategorization and lexical selection are involved. The causative transitivizer L-selects a VP, rather than an APASSP, or PASSP, etc. Consider the following (W&S page 240):

BASIC INTRANSITIVE > TRANSITIVE WITH *-te* 'CAUSE'

tuqu 'die' *tuqu-te* 'kill s.o.'

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[29]I have not discussed the role of CP in Labrador Inuttut, as it has been largely superfluous to this data. Whether we want to consider IP as more properly TenseP, or Finiteness P I also largely ignore as the issue is not crucial to this data. It might be more proper to consider these 'say' verbs as taking a CP complement rather than a bare VP. For the ease of exposition I have more or less adopted the stronger version of the PF Licensing Principle and have suppressed projections of COMP and INFL where they contain no phonetically licensed material.

tupaq	'awaken'	*tupag-te*	'wake s.o. up'
ane	'go out'	*an-te*	'bring sth. out'
kiner	'become dry'	*kiner-te*	'dry sth. out'

APASS INTRANSITIVE > TRANSITIVE WITH *-te* 'CAUSE'

tamar-i	'lose things'	**tamar-i-te*	'make s.o. lose things'
ini-i	'hang things out'	**ini-i-te*	'make s.o. hang things out'
tuqu-c-i	'do killing'	**tuqu-c-i-te*	'make s.o. kill'

PASS INTRANSITIVE > TRANSITIVE WITH *-te* 'CAUSE'

nere-sciur	'get eaten'	**nere-sciur-tei*	'get sth. eaten'
tegleg-ciur	'get stolen'	**tegleg-ciur-te*	'get sth. stolen'
tuqu-te-sciur	'get killed'	**tuqu-te-sciur-te*	'get s.o. killed'

W&S conclude from this that morphological rules cannot be allowed to interact freely. They further conclude that an analysis with some affixes having "syntactic relevance" is to be preferred, as it entails a distinction between freely applying and syntactically applying affixes. The analysis I have proposed in this section supports this contention of W&S, without entailing the existence of the sort of dual representation which Sadock has proposed to deal with these phenomena elsewhere.[30]

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[30]I have not had time in this thesis to deal in any depth with the many recent proposals for dual representations, usually incorporating syntactic and lexical information (e.g. Sadock 1985, Williamson 1984). The most common form these proposals take involves a string simultaneously analyzed by two trees, usually represented as one above, and one inverted below. I have been working under two assumptions, however, related to these proposals. One, that a grammar which does not require dual simultaneous analyses, with the associated problems of integration and information-passing, is preferable to one which does, and Two, that

Various other analyses in the Principles and Parameters model of grammar have attempted to deal with the sort of data discussed above, including some which have radically motified the program set out by Baker (1988). In the next section I consider a recent proposal by Li (1990) which involves radical alterations to the primitives of syntactic theory, such as the definition of A and A-bar positions, and to the Binding Theory. The analysis developed above neatly accounts for the problems discussed by Li without requiring the sorts of extensions to the theory which he proposes.

9.4. Verb Incorporation in Swahili

Li (1990) considers evidence from Swahili which indicates a problem with one type of causativization, or verb incorporation, as proposed by Baker (1988). The type under consideration arises when the causative affix is treated as the matrix verb, which takes a CP complement. The verb heading the VP dominated by that CP raises through INFL, and COMP through head-movement to adjoin to the matrix verb. One diagnostic for this type is passive and object agreement. In both cases, the deep subject will function as direct object for the matrix clause, thus passivizing or triggering agreement on the matrix predicate.

(21) Na-ju-a kama Hamisi a-na-ogop-a giza

I-know-IND that Hamisi he-PRES-fear-IND darkness

'I know that Hamisi is afraid of the dark.'

(22) Juma h-a-ku-tak-a Ahmed a-j-e

Juma NEG-he-PAST-want-IND Ahmed he-come-SUBJ.

'Juma didn't want Ahmed to come.'

Examples from Vitale (1981).

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accounts such as the one herein which represent word-building operations syntactically, thus preserving all the information associated with these operations, provide a more elegant substitute for dual representations.

Li points out the following two problems for Baker's analysis. (1) As these sentences have a similar deep structure to causatives in Swahili you would then expect the embedded verb to be able to raise to adjoin to the matrix verb by Verb Incorporation (VI). However, this is impossible. This leaves Baker's analysis with the problem of motivating lexically induced triggering of VI by certain verbs, rather than allowing the structure to either license or not license movement. (2) Further, as the embedded verb moves through INFL on its way up to the matrix verb, in no cases does it adjoin to a phonetically realized INFL, thus carrying the embedded INFL up to the matrix verb. If the matrix verb freely takes CP complements, we would expect this situation to arise. Li asserts:

> One would expect (a) that every verb that can take a clausal complement can potentially trigger VI, and (b) that the compound verb formed through VI may contain the embedded INFL in it. As far as I know, these predictions are incorrect for every language in the world. (1990 p. 401)

In order to show that the first problem is not simply reducible to whether or not the matrix verb can surface as an affix, Li gives examples from Onondaga which show that a verb (*nohwe?s* 'like') which can take an incorporated noun cannot take an incorporated verb:

(23) Pet wa?-ha-hwist-ahtu-?t-a?

Pat PAST-3MS-money-lost-CAUSE-ASP

'Pat lost money'

(24) K-a?sha-nohwe?s

1S-knife-like

'I like the knife.'

(25) Alice e-nohwe?s a-yot?ahse-ny-a?

Alice 3S-like INDEF-basket-make-ASP

(data from Chafe (1970)

Thus whatever is blocking VI in non-causative sentences, it is not some affixal property of the matrix verb.

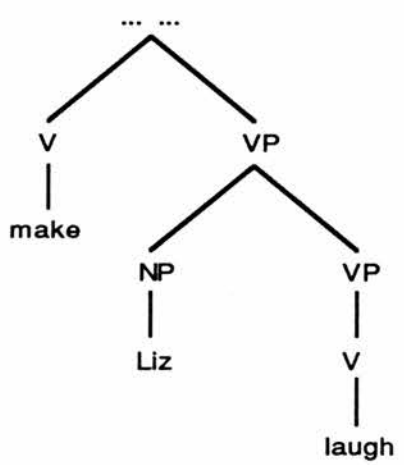
Li goes on to point out that verbs which trigger VI are most commonly either causatives or modal-like verbs. Further, causatives rarely take complements in the form of a full clause, suggesting that their complement is not CP, but VP. Consider the following data from English:

(26) Chris made Liz laugh.

(27) *Chris made Liz to laugh.

(28) *Chris made (that) Liz laughed.

make cannot take either a non-finite clause complement, or a finite one, but must take a complement clause with the verb in its base form. Following Chomsky (1986a), Li proposes the following structure for *make*.



where the complement of *make* is a small clause. The lack of an INFL projection predicts that no INFL can appear embedded in the matrix verb compound following VI.[31]

Li formalizes this as follows:

> A necessary condition on VI is that the matrix verb must be able to take a bare VP as complement. (1990 p. 404)

This analysis is dependent upon the validity of the Lexical Clause Hypothesis, which places the subject in [SPEC, VP] at D-Structure. Li notes in a footnote that Greenlandic Eskimo presents a possible counter-example to this.[32] Consider the following data taken from Fortescue (1984):

(29)	Miiraq	irniinnaq	sini-li-ssa-nirar-paa
	child	right.away	sleep-begin-FUT-say-AGR

'He said the child would soon fall asleep.'

Li does not view this as a problem because of other features of West Greenlandic which include, (a) although embedded TENSE is allowed, embedded AGR is not, (b) All TENSE affixes may co-occur with nonfinite clauses. These two properties suggest to Li that TENSE is not represented in the form of INFL as it is in many other languages.[33]

---

[31]This analysis has interesting consequences for case theory, in particular the notion that a verb inherits its ability to assign accusative case from the presence of its dominating INFL as suggested in Larson 1988.

[32]I have presented evidence earlier in this chapter supporting the Lexical Clause Hypothesis for the Eskimo languages. However, evidence suggesting that the Lexical Clause Hypothesis is universal is lacking. Li must assume it to be universal, despite evidence from English to the contrary.

[33]This raises the interesting question of which elements of what has generally been called INFL project into the axis of the syntactic tree, and whether or not this set of categories is universal. By "bare VP" Li might mean something along the lines of "Extended Projection of V excluding Finiteness", if we take IP to be better expressed as F(inite)P universally. The question of AGR in Eskimo is a very complicated one, as we saw earlier in this chapter, particularly under such VI processes as causativization in interaction with GF changing rules such as passive

In order to further motivate this analysis, Li presents the following two tree diagrams (p. 405).

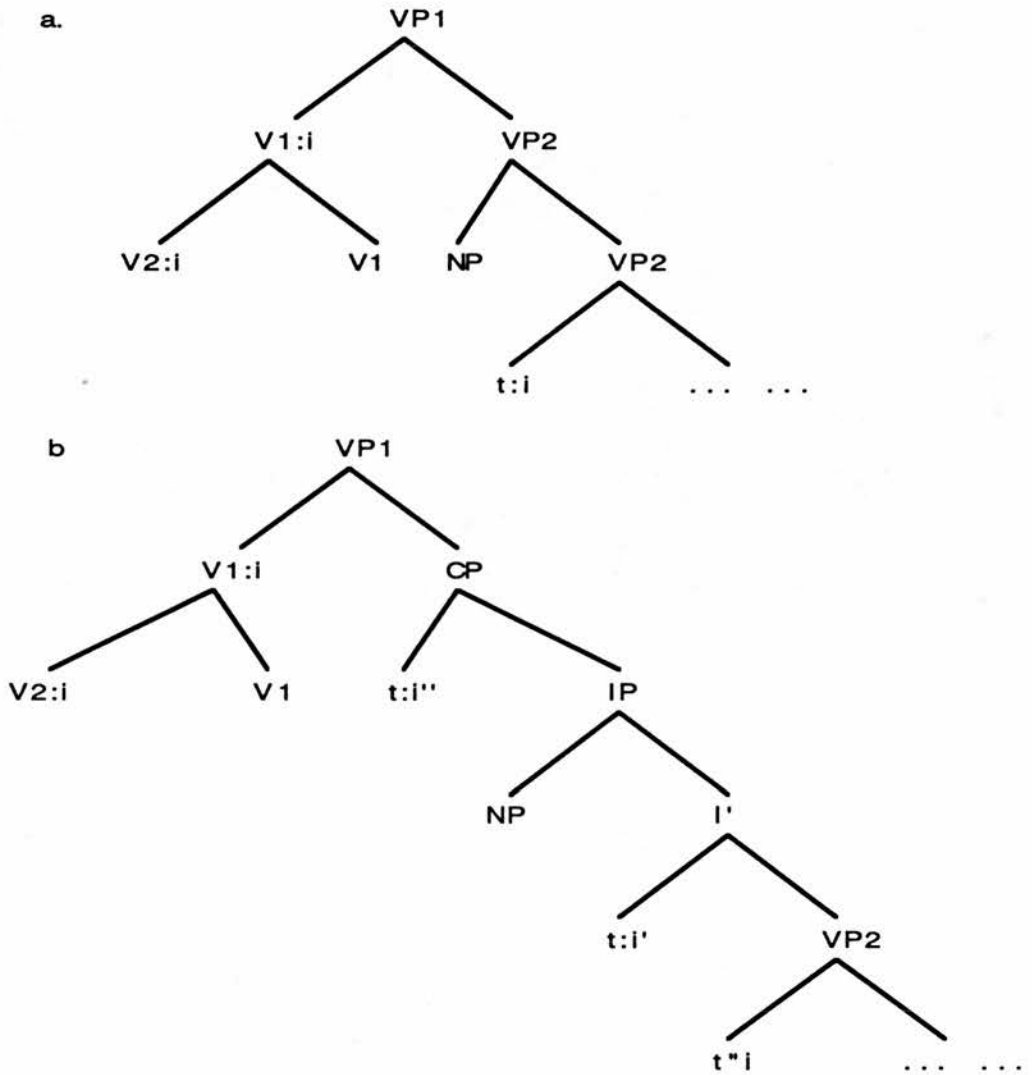


Diagram (a) illustrates the tree structure of a verb which allows VI. Diagram (b) illustrates the tree structure for a verb which takes a sentential complement, such as 'say'. The embedded verb in Diagram (b), in order to undergo raising, would first move to INFL (t:i'), then to COMP

---

and antipassive. In any case, if TENSE is a head with a syntactic projection (Pollock 1989, Chomsky 1988) then the problems raised by Li remain, as it will result in an A-chain with an intervening A-bar trace in the head of TP.

(t:i''), and finally up to adjoin to the matrix verb. If you consider the chains formed by movement in these two cases, an interesting asymmetry appears (p. 405):

a. (V,V)

b. (V,COMP,INFL,V)

Li suggests that in the case of (b), where a V heads and terminates the chain, but where intervening elements are COMP and INFL, improper movement could be the diagnosis, by analogy with examples such as below (p. 406, taken from Chomsky 1986a):

*John seems that it is [VP t' [VP considered [t to be intelligent]]].

In this case, the surface subject *John* is base-generated in position t, from which it adjoins to the dominating VP (t'), and from that position moves to matrix subject position.[34] The head and termination of this chain are A-positions, but the intervening position, t', is an A-bar-position. This chain then is ill-formed, according to Chomsky's (1986a) revision of Condition C:

An r-expression is A-free (in the domain of the head of its maximal chain).

In the example above, t is locally A-bar-bound by trace t', and is simultaneously A-bound by *John*, thus violating Condition C given above. In order to follow this form of argument through, Li then claims that the notions of A and A-bar-positions can be carried over to non-argumental categories such as V, COMP, and INFL. He does this by extending the notion of "argument" from categories that can be arguments, to categories that can take arguments. V counts as an A-position, and COMP and INFL as A-bar, thus completing the analogy with improper chains.[35]

---

[34]Recall that in the modification to the Barriers framework proposed in Chapter 7, this sentence is blocked by the impossibility of adjunction to VP. The only possible landing site for *John* is in [SPEC, IP]. If *John* ends up there, it cannot then raise further to the higher [SPEC, IP] due to the case-assigning requirements of INFL. If by some chance it could move, an expletive element (*it*) could not be introduced at S-Structure to receive NOM case, as it would have to substitute for the NP-trace of *John*.

[35]This definition of argument, however, relies on the intuition that the relationship between a V and the maximal projection sister it L-selects, and requires, is qualitatively different from

However, a couple of problems remain with this analysis. The extension of the notions of A- and A-bar-positions to include not only new syntactic categories (V, COMP, INFL) but also new syntactic levels (heads as opposed to phrases) is not motivated well enough. It is only given as a patching-up exercise on the theory, without independent motivation. The substance of the claim seems to be that every syntactic element is either A- or A-bar. If this is true, then its effects should be widespread throughout the grammar, and not limited to instances of VI. Further, given this analysis, the West Greenlandic data arises as a true counter-example. Whatever the TENSE affix is, whether true expression of INFL or not, it is still a non-verbal element which appears in the compound verb. In order for Li's analysis to hold, it must then be considered, like the verbs themselves, as an A-position. Otherwise, the verb's adjunction to the TENSE element on its way up to the matrix verb will create an ill-formed chain.

Li's formalization of this concept begins with a consideration of Chomsky's (1986b) definition of A-positions:

> An A-position is a D-Structural position to which a theta-role can in principle be assigned.

As it stands, this definition cannot account for heads, therefore Li proposes the following to deal with the special case of heads (p. 407):

> A T-position is a D-Structural position to *or from* which a theta-role can in principle be assigned.
>
> where a T-position means a "theta-related" position in the sense that it is directly involved in theta-assignment. Thus V, N, A, and probably P in some languages are T-positions since they are occupied at D-Structure by (potential) theta-assigners. In contrast, I(nfl), C(omp), and D(et) are T-bar-positions because they dominate theta-bar-assigners at D-Structure.

Li doesn't comment further on his extension of the notions of argument and theta-assigner from phrasal categories to heads. If his argument goes through, one may wonder why any incorporation processes are available at all, as they all involve movement into a theta-

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the relationship between a TENSE or INFL and the VP it both L-selects and requires. As I have shown, it is possible to incorporate a more elegant definition of barrier with a more elegant theory of syntactic affixation, and still get the results Li aims for.

position. Movement to an A-position was strictly prohibited under the former definition of A-position. Why this property should have reverse polarity for heads and phrases is not considered. Li notes in a footnote that Chomsky (1986b) suggests that INFL assigns a theta-role to its VP complement. Li in his analysis must abandon this claim, or claim in its place that the theta-role assigned by INFL to VP is of a different nature to other theta-roles, and thus doesn't fall under his definition (Li 1987).

Li must then redefine the Binding Conditions:

A. An anaphor is locally T-bound.

B. A pronominal is locally T-free.

C. A variable is T-free (in the domain of the head of its maximal chain).

where "locally" means some local domain. A variable is correspondingly defined:

An empty category is a variable iff it is in a T-position and is locally T-bound.

Li makes the further assumption that a binding relation holds only between elements of the same projection level, that is, that binding never holds between X^0 and XP. This latter assumption raises problems for analyses such as Cann & Tait (1990), in which a head may move out of its dominating maximal projection, but still in some sense bind that maximal projection.[36]

A simpler analysis, which however maintains the theoretical framework invoked by Li, involves the definition of minimal governors along the lines of that suggested in Chomsky (1986a). In a footnote, Chomsky considers defining possible governors in the case of Minimality relativized according to category, thus an adverbial head, for example, wouldn't count as a closer possible governor for a verb trace. Rizzi (1990) extends this proposal with a further definition of Relativized Minimality which distinguishes lexical heads from non-lexical

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[36]This appears to be the case in certain constructions also which involve elements referential at the head level, such as pronouns.

heads. Either definition would serve in this case to give the effects Li looks for, without necessitating further definitions of theta-positions, and another version of the Binding Theory.

10. Agreement and Pronominal Arguments

We have seen in previous chapters that agreement morphemes on verbs can have various sources. The main dichotomy which has emerged is between (1) Agreement morphemes arising through SPEC-head coindexing with an argument position (e.g. Piapoco) and (2) Agreement morphemes arising through the incorporation of pronominals (e.g. object agreement in French). We have claimed that all transparent concatenation is syntactic, and have treated both of these processes as characterized by involving movement between levels of syntactic representation (here, D-Structure and S-Structure). In this chapter we will consider in some depth an instance of pronominal incorporation in Lakhota (Siouan). In order to better understand the syntax of Lakhota, we will first consider some typological proposals which help to characterize its structure as a Head-Marking, Non-configurational language with extensive Pronominal Arguments and Template Morphology.

The analysis we will present of these agreement morphemes in Lakhota can be seen as a development of Borer's (1983) analysis of pronominal clitics as:

> best characterized as the insertion of gender, number and person features into the matrix of a Case-assigning element. (1983, p 252)

However, we differ in that we do not claim that pronominal clitics absorb the case feature of the verb universally, as we have proposed a parameterization of types of case-assignment potential.[1]

10.1. Configurational and Non-Configurational Languages

Early work by Hale suggested the existence of a typological distinction between configurational languages like English, with fairly fixed word order and obligatory representation of arguments, and 'non-configurational' languages with free word order and extensive null

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[1]By taking this step, we break with the tradition (Borer 1983, Speas 1990, Ouhalla 1991) which claims that the locus of parametric variation lies in Inflectional items. In our analysis, verbs, for example, are also parametrized as having different case assigning properties.

anaphora. Chomsky used this in Lectures on Government and Binding (1981), claiming GB to have been developed with configurational languages in mind. At this time, Hale referred to non-configurational languages as W* languages, taking the star (*) to be the Kleene star indicating a sentence was a flat succession of words. Hale was working principally on Australian languages at this time.

The proposal that languages can differ radically with respect to their representation at the level of syntactic structure has had a profound effect on recent syntactic theory. Much of the more wide-ranging work on the Principles and Parameters research direction of Government-Binding theory has dealt with this question by proposing various configurationality parameters to account for these fundamental differences between languages. If we were to compare the research on the configurationality parameter with research on some other parameter, for example the pro-drop parameter, we would see that the proposals for analyzing the former parameter are very much less detailed and formally rigorous than those characterizing the latter. This situation arises in large part through the areal nature of the languages in question. Pro-drop occurs in languages with long traditions of grammatical inquiry, which have a proportionally large number of linguists engaged in their study. Most of the languages which display the prototypical non-configurational properties belong to language families without historical records, many without grammars of any description, and with only a few linguists engaged on their full time study. These languages, predominately the indigenous languages of the Americas, Australia, and to some extent Asia, lack detailed grammatical descriptions. Therefore, the process of deciding what part of the grammar of such a language determines its nonconfigurational properties is dependent on fairly shallow observation of its surface structures, as no formal analysis of its binding properties, complex syntactic constructions, word-formation rules, etc., exists. As a result, proposals for a configurationality parameter often founder or fail to impress based on their lack of detailed syntactic analyses, formal definition, etc. To some extent, to invoke a parameter with such wide-ranging effects is to subvert the current program of GB research which tries to derive broad surface syntactic differences from subtle differences in the application of the various modules of the grammar. To take the pro-drop parameter as an example again, we see various syntactic phenomena described by the one parameter - absent subject pronouns, free subject verb inversion, lack of *that*-trace effects. The naming of this as a parameter can only be the first

step. The solution comes when such clustered behaviour is accounted for by discrete differences in the grammars of pro-drop and non-pro-drop languages.

Some of the argumentation which has followed from Hale's proposal of the existence of non-configurational languages has focussed on a critique of the diagnostics which he proposed: (1) free word order, (2) free null anaphora, (3) syntactically discontinuous constituents, (4) lack of subject object asymmetries.

Many have pointed out that some languages which are clearly not configurational have some constraints on word order, e.g. Warlpiri has a strong AUX 2 constraint, as does Papago. Many languages which show free null anaphora are strongly verb final. Heath (1986) gave many arguments to show that Nunggubuyu is "freer" of subject-object asymmetries than is Warlpiri. Detailed consideration of the languages claimed in the literature to be non-configurational reveals them to manifest radically different properties, not just from configurational languages, but from each other. To the extent that this is true, the goal of finding a single parameter which will distinguish the two types of languages is surely a highly idealized one. In his earlier writings, Hale concentrated on freedom of word order as the most important distinguishing characteristic of NC languages. This caused many researchers working on languages such as Japanese and German, which appear to have some sort of "Scrambling" rule, to consider those languages in the light of this parameter. More recently, Hale has proposed that it is the absence of lexical arguments at surface structure that crucially distinguishes NC from C languages. This direction centers attention on the Projection Principle, which requires all arguments of a verb to be represented throughout the levels of syntax, and from this onto the status of the lexical arguments which do non-obligatorily appear.

To claim that the Projection Principle holds of the lexical entry alone (Hale 1983) is to seriously undermine one of the foundations of UG. Further, Hale must assume that the lexical entry (which he reifies as a level of Lexical-Conceptual structure) must feed the semantic interpretation as well, whether at LF or after. The ramifications of this alternate input to the semantics has not been widely explored. The question of the status of lexical arguments appearing in sentences in NC languages forces one to consider whether they are manifestations of an argument which is otherwise realized as an empty category (pro) or are themselves

adjuncts, with something of an appositive reading. If they are arguments, what is their relationship to the agreement markers on the verb? If they are adjuncts, what are the agreement markers on the verb? Clitic pronouns? Affixes which bear thematic roles? How does Case Theory work in such a language? Questions of case transmission are further complicated in languages such as Warlpiri which demonstrate a case split between the pronominal affix marking on the AUX and the lexical noun phrases which appear.

The question of the treatment of syntactically discontinuous constituents doesn't arise in many of the NC languages, and seems therefore to be an issue more for the grammar of a particular language which demonstrates it, such as Warlpiri, than a question for a typology of languages.

Subject-object asymmetries, on the other hand, stand in a fundamental relationship to questions of differing syntactic representations. It has generally been assumed that these asymmetries arise from the different structural positions of subject and object, with the object forming a constituent with the verb, and the subject standing in some position outside this constituent. Differences in extraction facts for subjects and objects do seem to arise from different structural relations, but the existence of asymmetries in the binding of reflexives, for example, seems to be less clearly tied to structure. These could perhaps arise from a hierarchy of thematic roles, as has been suggested by Wilkins (1989). If this is the case, then the differential binding properties of subjects and objects with respect to reflexives can no longer be seen as evidence for a VP at any level of representation, even in lexical structure.

In his 1983 paper Hale proposed a configurationality parameter to account for this typological difference. This parameter was based on the Projection Principle.

Configurational Language:

The Projection Principle holds of the pair (LS, PS)

Non-configurational Language

The Projection Principle holds at LS alone

To compensate for the weakening of the Projection Principle in this parameter, Hale proposed a level of Lexical Conceptual Structure which represented the argument structure of verbs (the lexical structure) and a vaguely generative semantics representation of the meaning of verbs (the conceptual structure).

10.2. Pronominal Argument vs Lexical Argument

Jelinek (1984) follows a different course in accounting for this data. She points out that Hale's Configurationality parameter represents a considerable weakening of the Projection Principle. This is taken to be a negative result as the Projection Principle is considered one of the most fundamental aspects of Universal Grammar. Jelinek also bases her analysis on Warlpiri. She presents the following data. Note that the order of the clitic pronouns is invariant.

(1)	ngajulu-rlu	ka-rna-ngku	nyuntu-Ø	nya-nyi
	I-ERG	PRES-1sgNOM-2sgACC	you-ABS	see-NONPAST
	'I see you'			
(2)	nyuntulu-rlu	ka-npa-ju	ngaju-Ø	nya-nyi
	you-ERG	PRES-2sgNOM-1sgACC	me-ABS	see-NONPAST
	'You see me'			

(3)	nyuntu-Ø	ka-npa	purla-mi
	you-ABS	PRES-2sgNOM	shout-NONPAST
	'You are shouting'		
	'You shout'		

(Hale, 1973, p. 328)

The above data illustrate the agreement marking on the auxiliary and the interesting fact that the case system on the nominals is ergative-absolutive whereas the case-marking on the auxiliary elements is nominative-accusative, suggesting that there is no direct case transmission from nominal to agreement marker or vice versa. Jelinek argues that the agreement markers on the AUX elements are clitic pronouns which fulfill the argument requirements of the verb. The lexical nominals are thus optional adjuncts with non-argumental functions.

The first step in her argument is to define two different systems of case for Warlpiri.

1. Grammatical case (G-case). G-case appears on clitic pronouns. The G-cases are NOM, ACC and DAT.

2. Lexical case (L-case). L-case appears on nominals. The primary L-cases are ERG, ABS and DAT. secondary L-cases are LOCATIVE, PERLATIVE, ALLATIVE, ELATIVE, etc.

She then distinguishes between adsentential adjuncts (marked with secondary L-case) which cannot be coindexed with a clitic pronoun, and adargumental adjuncts (marked with primary L-case) which must be coindexed with a clitic pronoun. In order to achieve coherence and completeness, she must then propose a Linking Rule, and a Case Compatibility Rule, to ensure that the incorporated pronominals and the external NPs bear the proper relationship to each other.

Linking Rule

A clitic pronoun may be coindexed with a nominal, providing the L-case of the nominal and the G-case of the clitic pronoun are compatible (assigning a distinct index to each clitic). (1984, page 52)

Case Compatibility Rule

a. NOM G-case is compatible with ABS and ERG L-case

b. ACC G-case is compatible with ABS and DAT L-case

c. DAT G-case is compatible with DAT L-case.

(Jelinek, 1984, page 53)

The obvious though somewhat complex stipulations must be made in order to get the correct indexing for NOM and ACC. In this analysis, verbs subcategorize for G-case, not L-case.

This analysis has several disadvantages, foremost the unexplanatory character of this argument linking. Ideally, the difference in case systems should follow from some other general characteristics of Warlpiri and other languages who share a split ergative system.[2]

According to this, Warlpiri is a W-type non-configurational language. Lakhota, as we will see, is of a more dubious nature. As Lakhota has no obligatory AUX element and is a strictly head-marking language (roughly, it shows no case marking on the nominals) it is unclear how it relates to this typological distinction

Jelinek argues further that split ergativity arises from two distinct case systems. The clitics are governed by the verb and thus receive G-case.

The nominals are governed by their postpositional case particle and thus receive L-case. Jelinek thus formulated an Extended Configurationality Parameter:

Configurational Language:

Object nominals are properly governed by the verb

Non-Configurational Language (W-type):

Nominals are not verbal arguments but are optional adjuncts to the clitic pronouns that serve as verbal arguments.

(Jelinek 1984)

10.3. Head-marking versus Dependent-marking Languages

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[2]The commonness of split ergativity suggests a more interesting underlying explanation.

Nichols (1986) proposed a typological distinction between languages which code syntactic relations on the heads (Head-Marking Languages) and languages which code syntactic relations on the dependents. Dependent-marking languages frequently show case-assignment by the verb to its associated arguments:

(4) vir canem audit

man-NOM dog-ACC heard

'The man heard the dog' (Latin)

Whereas in head-marking languages nominals generally lack morphological case.

(5) wičhá́sha ki igmú́ ki nax̣ų́

man the cat the (3/3)-hear

'The man hears the cat' (Lakhota)

Though the nominals lack case, the verb codes agreement.[3] Thus the argument structure of the verb can be read off the verb itself, through its agreement morphology. This typology can also be seen in dependent-marking on adpositional phrases, possessives, and other asymmetrical constructions.

(6) y-ul te' n̈ah

3.ERG-in CLASS house

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[3]This example illustrates a typical case of third singular agreement in head-marking languages, zero morphemes. That is, the stem of the verb is *nax̣ų́*. This general tendency for third person singular agreement to be phonetically null suggests that no affixation is involved, but that the interpretation arises through the application of a default semantic interpretation rule for predicates in these languages, "There exists an X such that . . ."

'in the house' (Jacaltec)

(7) s-mam naj winaj

3.ERG-father CLASS man

'the man's father' (Jacaltec)

Typically, as the relationships involved are coded on the head, the dependent becomes grammatically optional.

(8) y-ul

3.ERG-in

'in it' (Jacaltec)

(9) s-mam

3.ERG-father

'his father' (Jacaltec)

(10) naxų́

(3/3)-hear

's/he hears it' (Lakhota)

In some extreme cases of head-marking, a language can code agreement with all of its arguments, the so-called "cross-referencing" languages.

(11) chokka is-sa-kachi-tok

house (3.ACC)-2.NOM-1.DAT-sell-PAST

'You sold me the house' (Choctaw)

The following table illustrates the possible parameters of relationship coding:

CONSTRUCTION	HEAD	DEPENDENT
POSSESSIVE	possessed	possessor
ADJECTIVAL	noun	adjective
ADPOSITIONAL	adposition	noun
SENTENTIAL	predicate	argument
VERBAL	auxiliary	verb
CLAUSAL	main clause	relative or subordinate clause

This distinction, however, is neither absolute or exhaustive. The two systems can coexist within the same language in several ways. A language can show different marking patterns in different constructions, e.g. Swahili which has object-agreement on verbs (head-marking) and noun-class agreement on adjectives (dependent-marking); a language can manifest both head- and dependent-marking in the same construction, e.g. Quechua which has both case and object-agreement; a language can exhibit marking based on a different system, e.g. Tagalog where which element is marked depends on word order; or a language can show no morphological tendencies in either direction, e.g. Vietnamese or Chinese.

Historically, generative treatments of syntax have concentrated on dependent-marking languages such as English. The proper representation of a head-marking language within the Principles and Parameters model has been considered by many linguists, but little concensus exists.

10.4. Agreement and Pronominal Clitics

So far, we have postulated a distinction between incorporated pronouns (or pronominal arguments), in which the verbal affix represents an argument of the verb, and true agreement,

where a verbal affix only codes certain featural information of the verbal arguments, such as gender, number and person, but does not in itself satisfy the verb's subcategorization or theta-assignment requirements. The treatment of null subjects in Italian in Tait & Cann (1990) entails, to some extent, the existence of pronominal incorporation to license null anaphora. Later in this chapter, I provide evidence for the existence of both systems in Lakhota - both incorporated pronominals acting argumentally, and an separate agreement suffix coding number. The syntactic ramifications of the existence of both systems in affixation are fairly clear with respect to the hypothesis investigated in this thesis that all overt affixation involves syntactic rules (and vice versa). If an agreement affix, generally conceived, serves to license null arguments, then that affix should be syntactically active, and not the product of the application of a morphological rule in the lexicon. If an affix only serves to code featural agreement, then its point of origin in the grammar is not so crucial. It is possible to give accounts of this sort of morphology, sometimes characterized as inflectional, as either arising in the lexicon, or in the syntax through the operation of a feature-passing mechanism (as in SPEC-head coindexing in GB, or through the Head Feature Constraint, Foot Feature Constraint, and Control Agreement Principle in GPSG (Gazdar, Klein, Pullum & Sag 1985). Coherent arguments supporting both positions are possible, but little hangs on the outcome empirically. Provided no syntactic affects follow from true agreement, then it is immaterial to this thesis where it arises. Thus far, then we have established the following dichotomy:

True Agreement: (I) Codes person/number/gender information; (II) Arises through SPEC-head coindexing[4]; (III) Can display complex phonological variation including syncretism with unlike categories; (IV) Has no syntactic affect; (V) Allomorphy unaffected by syntactic context.

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[4]I will adopt this syntactic origin for agreement for consistency, as in general I am preferring syntactic accounts to lexical ones. However, given the definition I have established for what I am calling true agreement - lack of syntactic affect - evidence establishing the point of origin for this is difficult to establish empirically. In general, arguments about this sort of agreement must rely on theory-internal notions of elegance, economy, etc.

Pronominal Arguments: (I) Satisfies the Projection Principle by representing the arguments of the verb; (II) Affixes to the verb through head movement; (III) Must be morphologically transparent; (IV) May have overt syntactic consequences, such as licensing null anaphora effects; (V) Allomorphy affected by syntactic context e.g., animacy information.[5]

Given this choice point for a learner, when confronted with a verbal affix showing agreement, how does the learner decide whether to analyze the affix as a pronominal, or as part of an agreement system? Existence of null anaphora would not seem to be enough to warrant the syntactic analysis, as we saw in the case of Labrador Inuttut in Chapter Nine. As a first approximation, we will assume that the learner assumes the incorporated pronominal analysis in case such a syntactic projection[6] is paradigmatically licensed. By **paradigmatically licensed**, we mean:

(1) Occupies a distinguished slot within a reasonably differentiated paradigm. By **reasonably differentiated** we refer to paradigms whose featural matrix adequately represents the distribution of those features elsewhere in the grammar. In the case of English, for example, person agreement is not reasonably differentiated, as -s/0 only codes [+/- 3rd] singular. The pronoun system in English displays a much more greatly differentiated feature system for person and number. Thus the agreement paradigm is not reasonably differentiated given the distinctions that exist elsewhere in the grammar of English. In general, we will treat the pronouns of a language as overt phonetic representations of the relevant feature matrix for agreement.

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[5]In Chapter Five I provided arguments for treating animacy as a syntactic feature, with consequences in many languages for raising constructions like Passive, and for fronting constructions like Topicalization. Further, it is organizational in various syntactic hierarchies, such as the NP Accessibility Hierarchy of Keenan & Comrie (1977).

[6]Recall that the incorporation analysis depends upon head movement of the bound pronominal. In order to undergo head movement, the pronominal must head a syntactic projection, corresponding to the appropriate argument.

(2) Does not display syncretism with an unlike category. In the case of person agreement, we will treat any morpheme from the [+V] (i.e., predicate) system as an unlike category, i.e. in particular tense or aspect.[7] To take English as an example again, we see that the third singular agreement morpheme *-s* also codes present tense. This syncretism of subject agreement with tense information represents a strong case against paradigmatic licensing for AGR in English, a conclusion which is born out by the data (especially the lack of null subject effects).[8] We will leave open for now whether or not an element can be paradigmatically licensed and still have undergone syncretion with a like category. The case in point will be the syncretism of subject and object agreement markers.[9]

10.4.1. Template Morphology and the Lexicon

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[7]This condition has not been adequately empirically established. However it is consistent with the definition of the domain of syntax in this thesis to prohibit syntactic projection in bound categories which are not the product of transparent concatenation.

[8]There is a problem, however, in distinguishing between agreement morphemes syncretized with tense, as in the case of English, and tense systems selecting for particular sets of agreement affixes, as in the case of Georgian and Eskimo, as is briefly discussed in the previous Chapter.

[9]This sort of syncretism appears to be widespread in precisely those languages which we would expect to show clear paradigmatic licensing effects - that is, strongly head marking languages with extensive null anaphora. If such syncretism can occur, and the syntactic analysis yet be maintained, then we must wonder about the semantics of referential expressions in these languages, as in a sense what we are claiming with such an analysis is that the subject and object have merged into a single syntactic unit for the purposes of our analysis. This would mean that verbs in these languages have two possibilities for argument structure - either taking a distinct subject and object (a similar case in English would be *John met Mary*) or taking a conjoined subject (*John and Mary met*). In support of such an analysis, we would expect such languages to display supporting evidence along the lines of (i) little evidence for a syntactic VP, and (ii) evidence of animacy effects in raising rules. I return to this issue later in this chapter in the discussion of Lakhota.

Simpson & Withgott (1986) consider various arguments in favor of treating pronominal clitics in languages which display "template morphology"[10] (specifically Warlpiri and Warumungu, Central Australia) as derived through lexical operations. Interestingly enough, they also supply evidence for treating clitics in French in the same way, though it would be unusual to argue that French displays template morphology.

By template morphology, Simpson & Withgott refer to the morphology of languages like Navaho which display a form of linearized morphology which differs from the morphology which characterizes the "layered" approach of modern morphological theory. The structure of verbs in languages with template morphology is often represented in descriptive grammars as a series of slots which may be filled by morphemes of different types. It is not uncommon in these cases to see dependencies between slots which are separated from each other by several intervening morphemes, thus giving rise to a violation of the Adjacency Requirement usually found in the treatment of morphology in languages with a "layered" morphology. Consider the following data from Warumungu (12) and Warlpiri (13):

(12) Akkil arn-angkku-a nya-yi

later I-you-FUT see-FUT

'I'll see you later'

(13) Ngaka-rna-ngku nya-nyi

later-I-you see-NONPST

---

[10]This use of the term "template morphology", first introduced by Stanley (1969) in his PhD thesis on Navaho verbs, refers to languages whose morphology can perhaps best be represented descriptively by identifying a series of linearly ordered slots which can be filled by various morphemes, usually in conjunction with a verb stem. It should not be confused with the other use of the term "template morphology" to refer to Semitic morphology which can be represented descriptively as a series of interacting consonant and vowel templates.

I'll see you later.

The clitic clusters in these two examples illustrate several ways in which clitic clusters differ from layered morphology. (i) Their distribution is determined syntactically. In these languages, the clitic clusters, including perhaps an AUX, obligatorily appear either in sentence-initial position, or directly after the first constituent. (ii) They are not phonologically reduced versions of free pronouns. (iii) They do not behave like words derived through either inflectional or derivational morphology, as there is no apparent "root" or "head". Thus they claim that these clitic pronoun clusters do not behave like affixes, reduced pronouns, or words. Simpson & Withgott (hence S&W) rely on the theory of Lexical Phonology and Morphology to settle the question of the definition and delimitation or inflectional and derivational morphology. Finally, they provide arguments for claiming that pronominal clitic clusters result from word-formation rules in the lexicon, and are then attached syntactically to their hosts through some version of lexical insertion.

In this chapter we consider whether or not a purely syntactic treatment of this sort of clitic cluster can be supported in the framework we have proposed thus far in this thesis. Unfortunately, S&W do not consider in any detail any analysis other than the lexical one for their data, due to their blanket acceptance of the Lexical Integrity Hypothesis (Lapointe 1981), which further defines and strengthens the Lexicalist Hypothesis of Chomsky (1970) by preventing any syntactic operations from referring to parts of words. They reject initially a treatment of pronominal clitic clusters as introduced by Phrase Structure Rules, though they note that technically it can be done. The reason for their rejection is based on the property of these strings that the linear ordering is sensitive to factors relating to animacy, person and number. S & W claim that animacy is a word-level property, "not a syntactic category fact." Yet as we saw in an earlier chapter, evidence does exist for treating animacy as relevant to the application of syntactic rules, at least within the Principles and Parameters framework.[11]

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[11]S&W are particularly interested in syntactic analyses involving Lexical Functional Grammar, in which it makes a great deal of sense to assume that operations are lexical until proven otherwise. The same data considered in a different theory can yield different results.

In general, there are several points of departure between the analysis of S&W and the one proposed within. Given their radically different assumptions, the problem becomes not whether S&W's account is adequate, but whether an account within a different, syntactically rich, framework is equally adequate. If this can be shown to be the case, then the evidence in favor of enlarging the morphological component to include operations that could be (and are) considered syntactic is substantially weakened, considering that a grammar should be maximally elegant.

The particular points of departure for S&W as compared to the proposals in this thesis are:

1 The acceptance of the Lexical Integrity Hypothesis as fact rather than as an empirically testable hypothesis.

2. The rejection of animacy as a feature with syntactic relevance

3. The assumption that "morpheme specific irregularities should not be the province of the syntax" (S&W p 152). Rather than acknowledging that lexical properties are relevant to the application of syntactic rules.[12]

4. The evidence of inflectional affixation feeding derivational affixation points to an enrichment of morphology (rather than syntax). This argument could equally well be taken to point in the opposite direction.

The evidence discussed in (4) is particularly interesting in terms of pursuing a syntactic account. Consider the following data:

Warlpiri:

(14) walya-kurra-ma-ni

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[12]This point can be seen as representing the major point of departure for GB and LFG. LFG has assumed based on lexical idiosyncrasy of verbs in allowing Passive to apply or not that Passive is a lexical rule. GB has not drawn this same conclusion.

ground-ALLATIVE-CAUS-NONPAST

'land on the ground' (e.g., a plane)

Warumungu:

(15) jalkkaji-kkina-rni-nta

spearthrower-ALLATIVE-CAUS-PRES

'put on spearthrower' (e.g., spear)

Manjiljarra (Western Desert family, Australia):

(16) Ya-nku-nja-rnirra-ngka + la nya-ku

go-FUT-NOMinalizer-completely-LOC+1plSubj see-FUT

'When they have gone, we will look at it' (from Clendon 1983).

Lexical Phonology and Morphology (LPM), by providing a strictly ordered cycle of rule applications, can achieve either strict ordering or inflectional affixation after derivational (as is generally held to be the case), or for these languages can allow feedback to an earlier level after a later one.[13] The problem then remains for S&W of how to extend LPM to cover template constructions such as pronominal clitic clusters.[14]

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[13]Unfortunately, this ability of LPM to accomodate itself to this data vitiates earlier claims for the benefit of LPM as providing a principled explanation for the exteriority of inflectional affixation relative to derivational.

[14]The original use of the term "template" morphology was clearly not appropriate for these clitic clusters. Template morphology in Navaho does contain a definable root or head (the verb), which takes affixal agreement morphemes, not clitics. The extension of the term to cover clitic clusters appears to be due to Perlmutter (1971). Contra to the assumptions tested in this thesis, S&W comment on this matter (p 150):

S&W differentiate Layered from Template morphology in terms of the following characteristics:

Property	Layered Morphology	Template Morphology
i. Lexical phonological rules	yes	yes
ii. Zero morphemes	no	yes
iii. Contains one root, one head	yes	no
iv. Zero derivation	yes	no
v. Adjacency constraint	yes	no
vi. No Lookahead	yes	no
vii. Usually encodes at most one argument	yes	no

Based on this array of opposing properties, S&W make the following proposal (p 158):

> Rather than make the morphological component, as it has usually been described in recent work, unnecessarily powerful, one can distinguish between concatenative, layered morphology with its constraints, and template morphology. . . In the next section we examine what seem to us to be clear cases of template morphology, namely, pronominal clusters, and a clear profile of this component emerges.

It would appear from this that S&W are proposing the existence of two separate morphological components, one layered and one concatenative, presumably not existing simultaneously in the mind/brain of a monolingual speaker. It is somewhat hard to see how

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However, we will not advocate the often concomitant position that templates act as "surface filters" on the syntactic string. Indeed, our view of word formation carries with it a sharp distinction between facts concerning morphology and those concerning syntactic categories. This is in keeping with the view that the nonlexical component of a language should be maximally general (Chomsky 1970, Bresnan 1982, Stowell 1981).

this doesn't result in precisely what S&W hope to avoid, the addition of considerable power to the morphological component.[15]

To support their claim for the templatic organization of clitic clusters, S&W set out the following characteristics of clitic clusters that differentiate them from concatenative morphology: (1) The phonological form of the morphemes can depend upon the presence of other items in the cluster:

Warumungu pronominal clitic clusters with second-person plural objects

SUBJECT<OBJECT

∅-arrkku	3sg-2pl				
arn-turrkku	1sg-2pl.				
ajul-tuku	3pl-2pl	OR	ajurn-tuku	3pl-2pl	
alkurn-turrku	1pl-2pl				

(2) The presence of a clitic with a certain case or number feature seems to inhibit the presence of another clitic, either in that class, in an adjacent position, or even several positions away. For example in Warlpiri, if an ABS clitic appears in "position 2", then "position 3" is never filled. But if a DAT clitic appears in "position 2" the clitic sequence is grammatical (Hale 1973, Laughren 1977, Swartz 1982)

(17)	*Ngarrka-ngku	kapi-∅-ju-rla	ngaju	punta-rni	karnta-ku
	man-ERG	FUT-3sg-1sg-3sg	1-ABS	remove-NPST	woman-DAT

'The man will take me away from the woman'

---

[15]Perhaps this could be the morphological equivalent of the claim in Chomsky (1981) that the grammars of configurational and nonconfigurational languages are substantially distinct.

(18) ngarrka-ngku ka-∅-ju-rla ngaju-ku karli-ki

man-ERG PRES-3sg-1sg-3sg 1-DAT boomerang-DAT

warri-rni

seek-NPST

'The man is looking for a boomerang for me'

(3) Pronominal clitic clusters violate the Adjacency constraint by demonstrating discontinuous morpheme dependencies. (4) They also violate the No Lookahead constraint, e.g. Dual Neutralization (Hale 1973, McConvell 1978) which blocks the realization of a dual clitic in conjunction with another [-sg] clitic - only plural forms surface; (5) Lack of transparent compositionality, e.g. *gliele* in Italian, which is a masculine dative clitic and a feminine non-SUBJECT clitic (**le le*); and (6) The possibility for metathesis exists.

As we will see in the following section, Lakhota pronominal agreement morphemes manifest most of these characteristics, yet we are able to give them a coherent syntactic account. Further, we will shed some light on what sort of syntactic configuration can give rise to these unusual characteristics.

10.5. Pronominal Arguments in Lakhota (Teton Dakhota)

Lakhota (Siouan) is a strongly head-marking language with extensive null anaphora. NP arguments have no overt case-marking.

(19) Wašíču ki mathó ki kté

Whiteman the bear the kill

'The Whiteman killed the bear'

(20) Mathó ki wašíču ki kté

Bear the whiteman the kill

'The bear killed the Whiteman'

wicha- marks third plural animate undergoers/objects. *-pi* marks plural subject or object.

(21) waší́čú ki hená mathó óta wičhá-kté-pi

Whiteman the those bear many 3plO-kill-pl

'Those whitemen killed many bears'

The unmarked word order is SOV but it can be OSV if disambiguated by verbal affixes (e.g. if the whitemen had died there would be a *wicha-* prefix).

(22) mathó wą waší́čú ki hená kté-pi

bear a whiteman the those kill-pl

'Those whitemen killed a bear'

Full pronominal affixes exist for first and second person subject and object:

(23) mathó ki wa-kté

bear the 1sgS-kill

'I killed the bear'

(24) mathó ki ma-kté

bear the 1sgO-kte

'The bear killed me'

Lakhota displays split intransitivity. That is, intransitive verbs show subject agreement from either the agentive paradigm or the patientive paradigm, according to the agentivity of the subject:

(25) wa-hí

1sgS-arrive

'I arrived'

(26) ma-khúže

1sgO-sick

I'm sick.

The general order of agreement morphemes is determined by the person, or rather animacy, of the arguments. In general the following order holds: 3pl [+animate] < 1 < 2. There is some syncretism in certain combinations of agreement, e.g. 1st Agent *wa* plus 2nd patient *ni* is realized as *ci*. Plurality of either subject or object or both is coded in a suffix *-pi*. *wicha* the third plural animate patient prefix doesn't require the plural agreement suffix *-pi*.

(27) ma-yá-kte

1sgO-2sgS-kill

'You killed me'

(28) čí-kté

1sgS/2sgO-kte

'I killed you'

(29) wičhá-wa-kté

3plO-1sgS-kill

'I killed them'

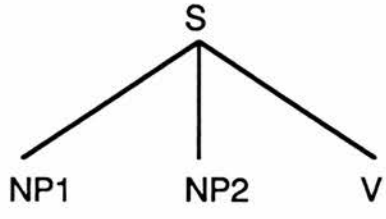
Therefore, pronominal affixes occur in an order unrelated to grammatical relations.

For example, *kahniga* 'to choose one'

(30) ų-yá-kahniga-pi 'you chose us.'

(31) ų-ní-cahniga-pi 'we chose you.'

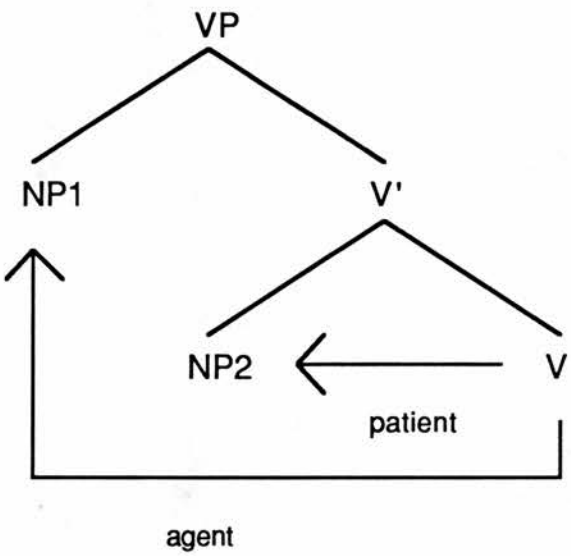
Van Valin (1987) has argued that theories similar to GB are unable to adequately describe languages such as Lakhota. In the process of this paper he presents arguments against the existence of a VP in Lakhota. These include: (a) the existence of "scrambling" effects; (b) the absence of subject-object asymmetries; (c) the possibility of weak crossover; and (d) the observation that only linear precedence (and not c-command) is relevant to binding.[16] The tree structure he assumes for Lakhota is given below:



Lakhota would appear to be a good candidate for a language in which the Lexical Clause Hypothesis holds, and both subject and object appear at D-Structure within the maximal projection of the verb. [SPEC, VP] is the position which receives the agentive theta-role of the

[16]Many of these arguments drawn from Williamson 1984.

verb, [NP, V'] receives the patient theta-role.[17] Basic word order arises if both NPs remain in situ, OSV arises if the object NP raises to a higher specifier position. Thus this argument in itself does not bear on the applicability of some version of GB theory to Lakhota. Consider the following representation of the projection of V in Lakhota.



Let us now consider Van Valin's second argument against a GB analysis of Lakhota. He notes that the assumption of case assignment arising under conditions of government is problematic if there is no VP.

There are two possible solutions to this problem which Van Valin considers: (i) Case assignment to nominals; and (ii) Case assignment to pronominal affixes. If we assume case assignment to nominals through linear order (lacking the configuration arising from a VP) we run into difficulty given the availability of scrambling effects. If we assume case assignment to

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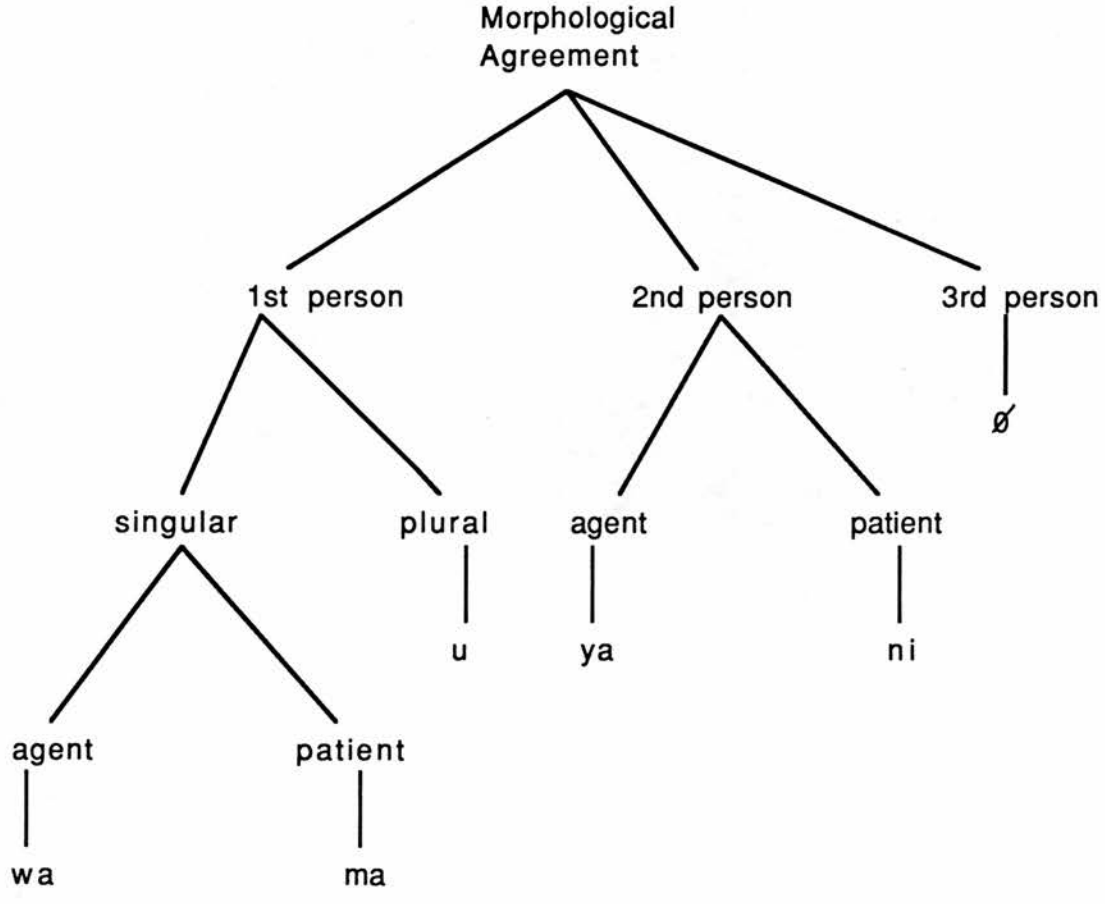
[17]The position of the subject in [SPEC, VP] poses problems for the analysis of ditransitive verbs in Lakhota, given the proposal earlier in this thesis that [SPEC, VP] is the position which receives the goal/benefactive theta-role in ditransitives in English. Agreement evidence in Siouan suggests that dative objects occur in canonical object position, as they trigger agreement on ditransitive verbs and direct objects do not.

nominals based on grammatical relations (cf. Anderson 1984) then according to Van Valin we again run into difficulty if grammatical relations are configurationally assigned (again, no VP). Further, we cannot claim that INFL always assigns NOM case given the split intransitivity examples, and we also can't invoke the 'unaccusative hypothesis' as it depends on a VP. He further anticipates problems with null anaphora sentences: are there empty categories which are assigned case and then transmit it to the affixes?

The second solution would be to assume affixes are directly case-marked. The advantages of this solution are; (i) it accounts for null anaphora; and (ii) the preservation of case assignment under (word-internal) government. However, this approach also encounters some problems: (i) what is the definition of word internal government?, and (ii) it must still distinguish subject and object.

Given the tree structure above, let us consider this problem of case assignment in the light of the proposals of this thesis. As case is never morphologically overt on lexical NPs in Lakhota, it is unnecessary to distinguish various cases, e.g. NOM and ACC. The only necessity is to ensure that all lexical NPs satisfy the Case Filter. If we assume that INFL (or V) in Lakhota is a profligate case assigner then this problem is solved. Recall we do not use the Case Filter to guarantee the absence of extraneous NPs in strings. The Theta Criterion serves this function by ensuring that all lexical NPs have a theta-relation to the predicates of the sentence. In terms of the pronominal agreement affixes there are various items to consider. Presumably Van Valin is concerned in his discussion of case transmission to account for the differing morphological forms of first and second person agreement, depending upon whether the person is agent or undergoer (subject or object, roughly). However, it has been assumed elsewhere in the theory that incorporated pronouns do not require case (Baker 1988) and various promotion effects in noun incorporation examples have been derived from this fact. If this is the case, then this morphological variation in form cannot arise through case-marking. We will assume that this variation arises through theta-marking, and that the incorporated pronominals are direct representations of the theta-grid of the verb. Let us look in some detail at the specificity of the morphological agreement system of Lakhota. We have claimed previously that pronouns exist at D-Structure as (more or less specified) feature bundles which receive their phonetic properties at PF. The particular set of features which are involved is subject to cross-linguistic

variation. English, for example, codes the referential features in its pronominal system [Person] and [Number] (and in the third person, [Gender]). It further codes the syntactic features [Case], [Reflexive], and [Possessive]. The system of bound pronominals in Lakhota is represented in the following diagram:



First person agreement is the most differentiated, second person is slightly less differentiated, and third person is arguably not present syntactically, as it is represented by a zero

morpheme.[18],[19] Plurality of agent and/or patient is coded by the suffix *-pi*. Further, if the first person plural pronominal *u-* appears without *-pi* it gives rise to a dual ('you and I') referential interpretation. If it appears with *-pi* the referential interpretation is first person plural.

We represent those examples demonstrating split intransitivity below:

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[18]There one exception to this, the prefix *wičhá-*, which is the subject of a later section.

[19]Further evidence that the interpretation of third person arguments results from the semantics rather than from the syntactic representation comes from the existence of two different coordinating conjunctions in Lakhota, *na* and *cha*. The semantics of *na* give same subject effects, the semantics of *cha* give localized different subject effects:

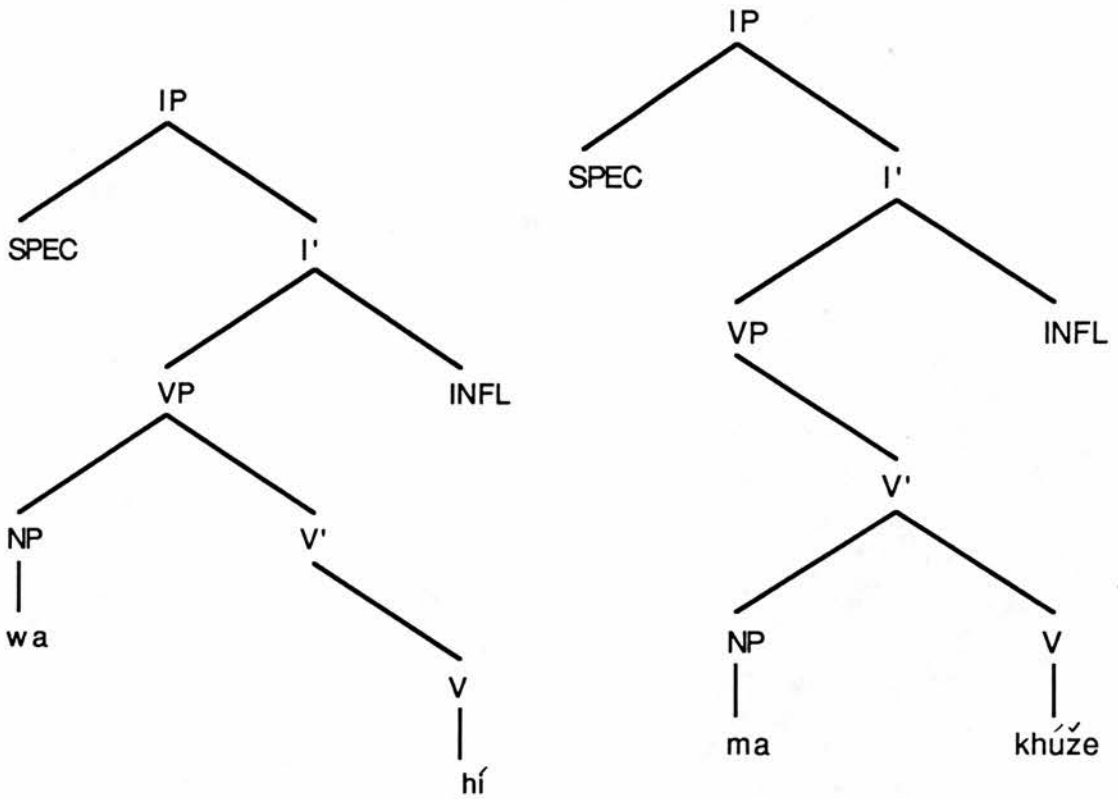
(i) wa-yaki na kté

stem-see and kill

'He$_i$ sees him$_j$ and kills him$_{j/k}$'

(ii) wa-yaka čha kté

'He$_i$ sees him$_j$ and so he$_j$ kills him$_i$'



Given these structures for the sentences *wahí* 'I arrive' and *makhúže* 'I am sick', there is no need to posit any movement, as the Extended Projection Principle has been abandoned in this thesis, and there are no constraints on Lakhota syntax which require a structural subject. In some sense, it is true that Lakhota lacks a subject, as a distinguished syntactic entity. Rather, Lakhota has a position of Theta-assignment which receives the Agent theta-role [SPEC, VP]. Under the definition of Head Movement, a pronoun in either position within the VP can adjoin to V, as both positions are governed by V.[20]

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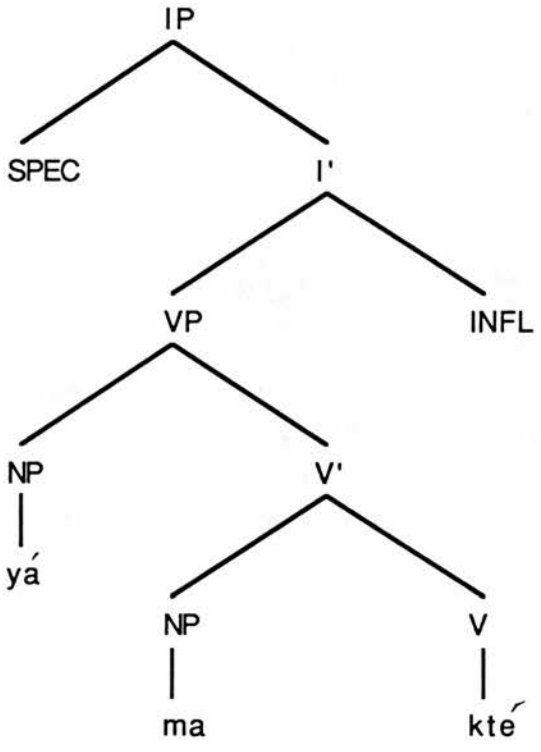
[20]Incorporation from [SPEC,VP] is technically possible in every definition of Head Movement proposed thus far, though little, if any, work has been done on it.

Although there is little evidence for phrasal movement in Lakhota beyond the scrambling effects, there is some evidence for X^0 movement. If we assume the V raises to INFL to get tense (as in English) we can propose an analysis assuming an underlying word order which is either SOV or OVS.[21] This has the desired effect of making the language strongly head final. Below is a tree illustrating the Lakhota sentence *mayakte* 'you killed me'.



This tree is consistent with the analysis developed thus far, however, several problems appear. This tree illustrates the assumption that the agreement prefixes have their origin as heads of NPs which appear within the VP, and then either incorporate or cliticize (by the Stray Affix Filter). Tense in Lakhota is either past or nonpast. Future tense is realized through a post verbal clitic *kte*. Nonfuture tense is not marked. Thus if the strong form of the PFLP

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[21]This follows from the assumption that sisters are unordered with respect to each other.

holds, there is no syntactic representation for nonpast, and thus no affix to attract the verb to raise. Further, we see that the agreement affixes appear in the wrong order in the tree, due to the linearity constraint on person for agreement prefixes. Further, this tree does not illustrate any obvious location for lexical NPs which are coreferential with the agreement markers. As in general first and second person arguments are only represented by the overt agreement prefixes, and third person arguments take a 'zero' agreement prefix and are more commonly realized as lexical NPs than either of the other persons, this may not be such a problem (that is, generally agreement prefixes and coreferential lexical NPs are in complementary distribution due to the structure of the agreement system in Lakhota). If we assume the definition of Head Movement which limits movement only to adjunction (or substitution) to a governing category, then both agreement prefixes can incorporate with the verb.[22] Let us now consider the structure created by adjunction to V.

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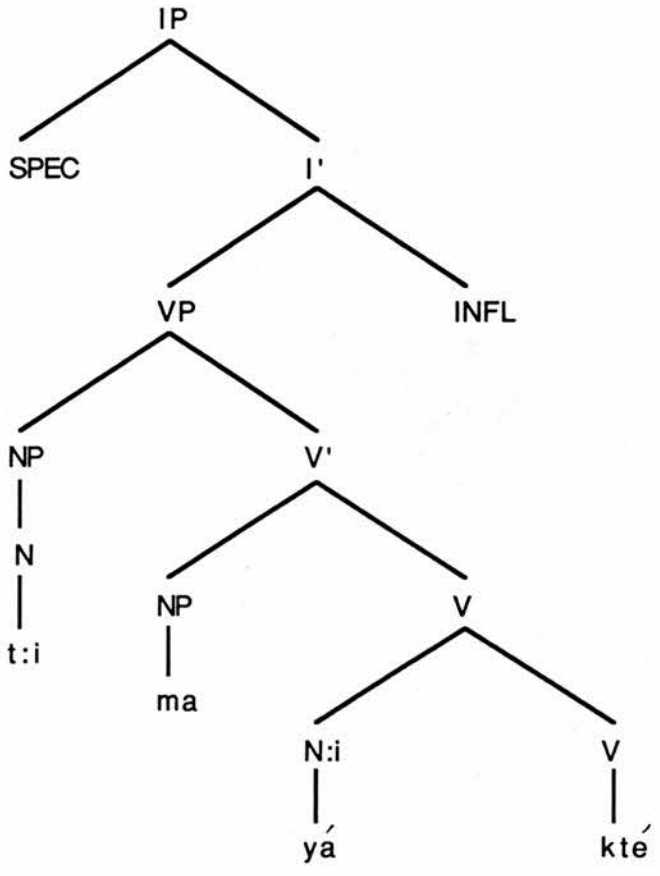
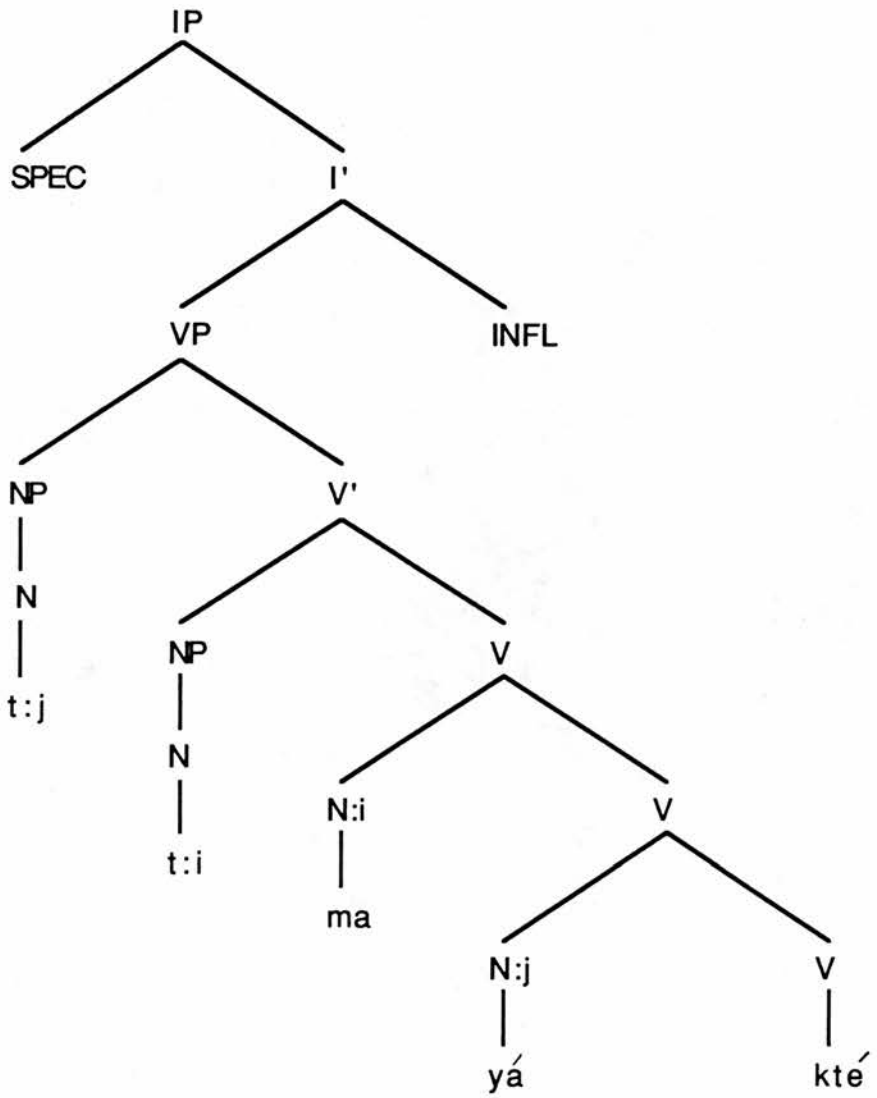
[22]We are assuming here that the verb governs its specifier position. This predicts that in languages in which the Lexical Clause Hypothesis holds, subject incorporation will be possible, at least for pronouns.

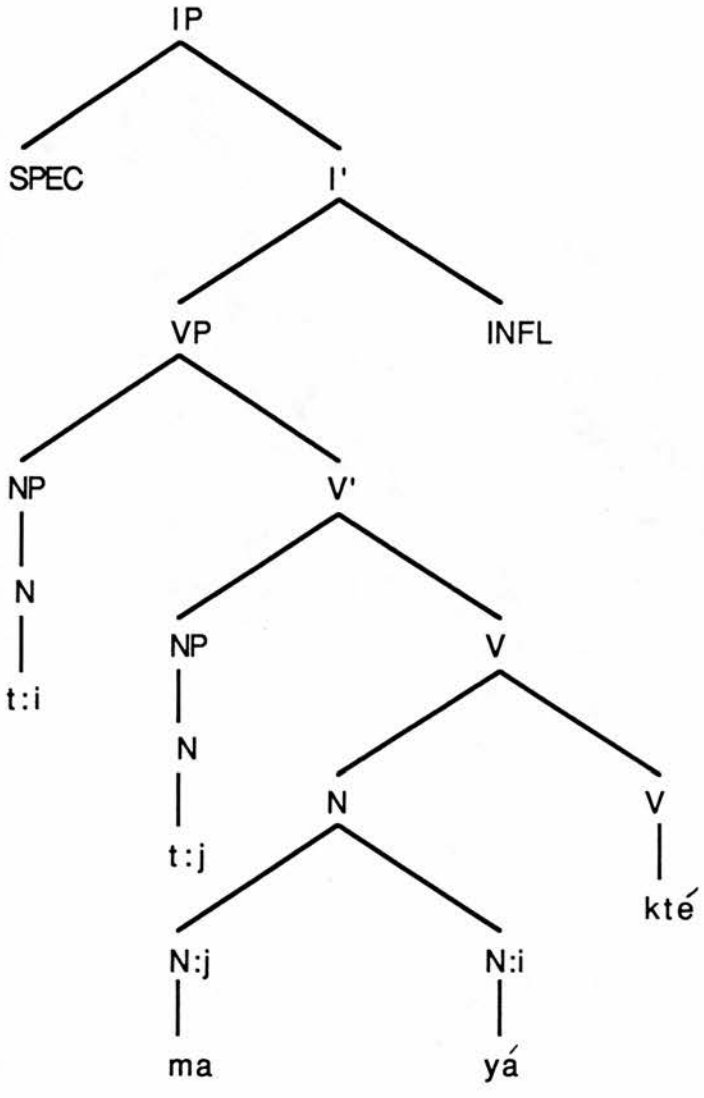


Here *ya*, the pronominal in [SPEC, VP], has adjoined to the verb. This gives the correct order of pronominals, but leaves *ma* an unbound affix, violating the Stray Affix Filter. Thus this cannot be the final structure. If the object position was empty, as in the case of a third person object, then we would have a well-formed representation for the sentence *yákté*, 'you killed he/she/it'. Let us now consider the structure formed by adjoining two pronominals to the verb. There are two basic choices for this adjunction, adjunction to V; [$_V$ ma [$_V$ [$_N$ yá] kté]] or adjunction to [N,V]; [$_V$ [$_N$ [$_N$ ma] [$_N$ yá]] kté]. The former structure may be more expected, but I will now provide arguments in favor of the latter. In order to get a better sense of these two constructions, let us also consider tree representations for them.



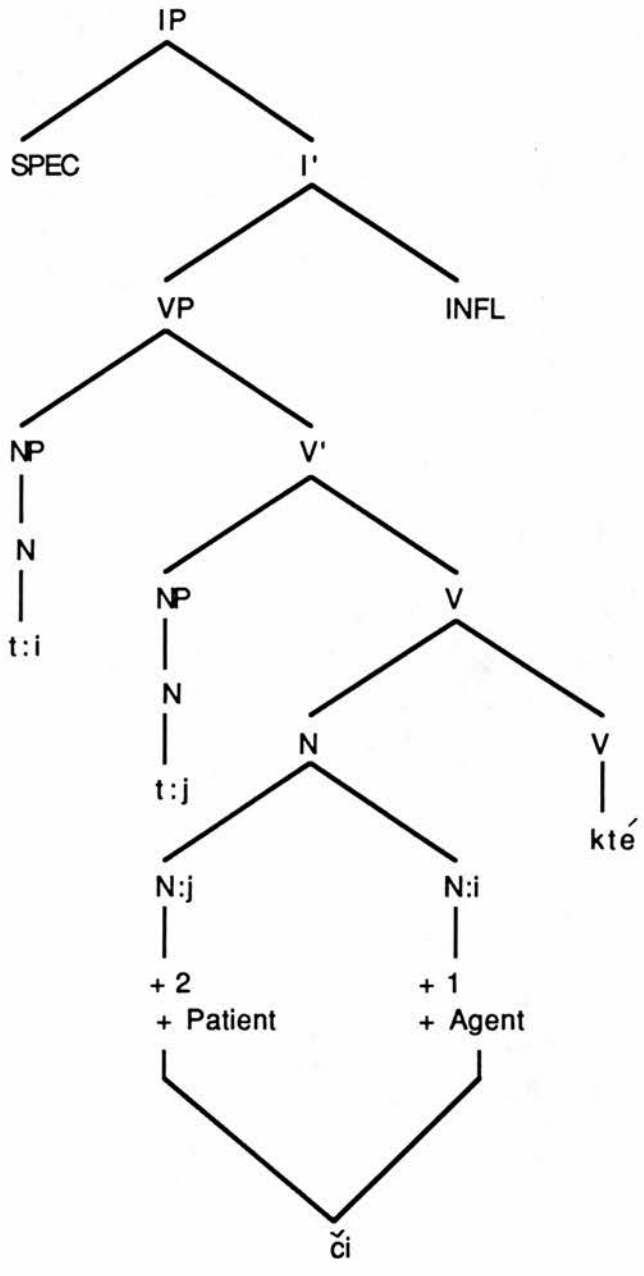
The tree above corresponds to the first type of adjunction. Note that the order in which the pronominals adjoin to the V determines the order in which they appear as prefixes. If this analysis is adopted, then we will have to posit an ordering constraint on adjunction which adjoins more animate pronominals after less animate ones (on the hierarchy given above). Otherwise, we could treat the adjunctions as unordered with respect to each other, but derive the animacy precedence effect through allowing secondary adjunction to either node of the

primary adjunction structure, which could have the effect of rendering adjunction structures potentially too variable. Let us now consider the other possibility for attachment.



This type of adjunction creates a constituent from the pronominals. The question arises of whether movement into this structure is licensed under the Head Movement Constraint. If we assume that sisters are unordered with respect to each other, then it is not possible to distinguish either pronominal as prior. Thus they both have equal status with respect to the V. If incorporation of one is well-formed, then as they are indistinguishable syntactically,

incorporation of the other is also well-formed. We can further motivate this incorporation by noting that given the general interpretation of adjunction structures, neither pronominal is actually dominated by V, as neither is dominated by all instances of V, a discontinuous node. Now let us consider the advantages of this structure. Given the constituent sisterhood of the pronominals we can derive the ordering effects quite easily. Sisters are inherently unordered, with ordering effects arising as the artifact of directionality of case assignment, government, etc. In this case, the ordering effect gives precedence to the most sister highest on the animacy hierarchy. No syntactic movement is necessary to achieve this. Further, remember that these pronouns appear at D-Structure as feature bundles, which are "spelled out" at PF. If incorporation of pronominals yields a constituent, N, then we might expect to get certain effects, such as syncretism of pronominals, which is the case in Lakhota. If we consider the Lakhota sentence *cikte*, 'I killed you' we can see this effect.



This combination of pronominals has syncretized in Lakhota, as mentioned above. This analysis provides a structural representation in which we might expect syncretism to take place. This phenomenon, sometimes called pronoun doubling, is widespread in Native

American languages.[23] There remains one further problem to discuss, regarding the proper binding of the traces of the moved heads. We have taken a strong stand against downward movement in this thesis, yet it might seem that we have abandoned it here. This problem only arises in those cases where there are no super VP heads to attract the verb to raise, as in the sentences considered above. There are two potential answers to this dilemma, neither seeming preferable to the other. (1) Allow the verb to remain in situ in these cases, but assume the M-command definition, under which the incorporated pronominals M-command their traces. (2) Allow the verb to raise freely (thus PF-licensing the IP). Once the verbal complex has raised, then the pronominal traces are properly bound. If the verb does not raise, we can assume the string is filtered due to improperly bound traces, or due to the lack of PF-licensing for IP.

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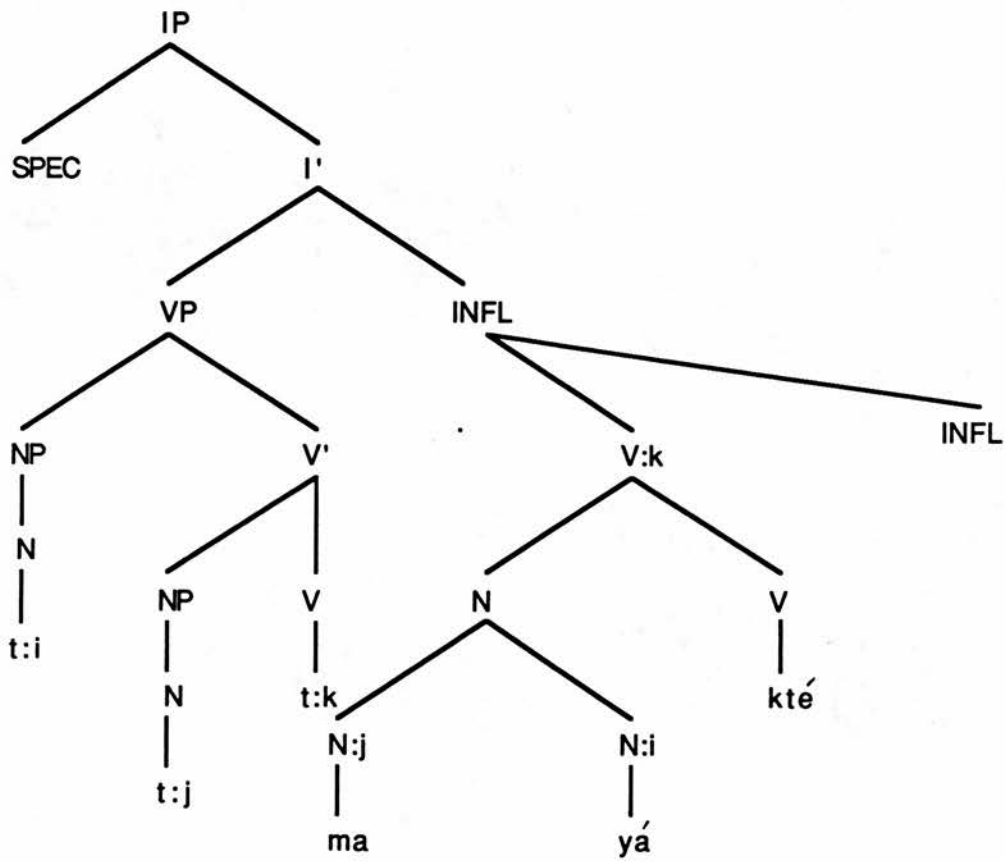
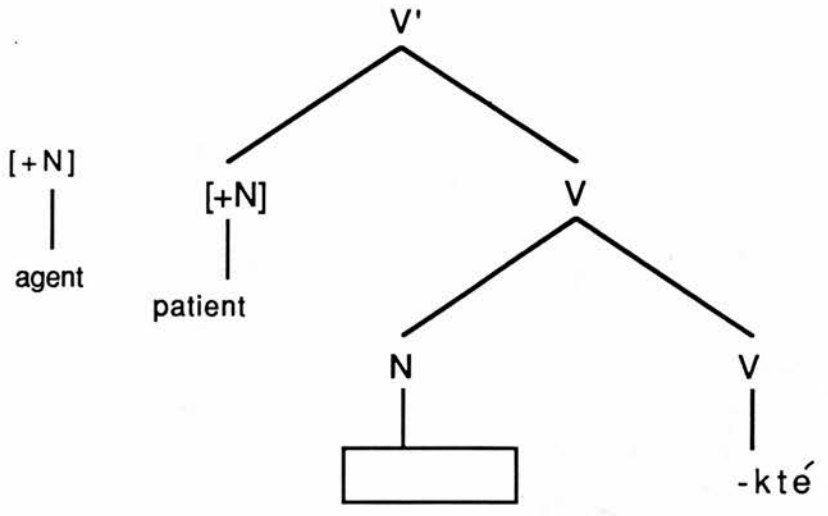
[23]Note that this is a substantially different treatment of syncretized agreement from that given in the previous chapter for Labrador Inuttut. I have tried to show that the syntax of these two languages is very different, and have in part represented this by treating this syncretism as involving pronominal incorporation in Lakhota, but in Labrador Inuttut as agreement with the sententially coded arguments (ERG and) ABS. It may be possible to extend this analysis to Labrador Inuttut, but this will be substantially complicated by the existence of morphological case on lexical NPs and the interaction of various valency-changing and grammatical-function-changing suffixes.



We can assume, further, that Lakhota verbs have lexical entries which code a position for the pronominals to fill.



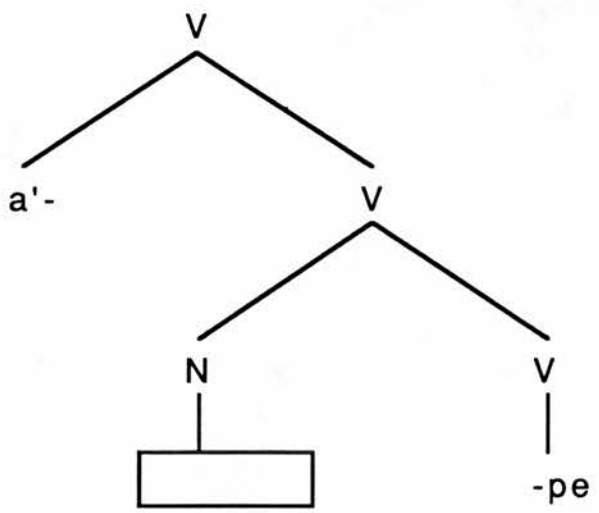
This amounts to a structural representation of the Stray Affix Filter. Once we allow ourselves the ability to represent so much of the verb's morphological structure in terms of a tree diagram, we may wonder if verbs ever take advantage of the other possibilities which this kind of representation predicts. That is, if lexical entries can indicate adjunction positions for a stem, can they indicate adjunction positions within a stem? A possibility which is available theoretically given this representation. So, for example, we might wonder if there are any verbs in Lakhota which infix the pronominals.

Lakhota has a large set of verbs which take 'prepositional vowe ls'. One example is the verb *ap'e*, 'to await one, wait for one'. Its paradigm is as follows (Buechel 1939):

a.	acíp'e	I await you (sg.)
b.	acíp'epi	I await you (pl)
c.	awíčawap'e	I await them
d.	amáyap'e	you (sg) await me
e.	ųkáyap'epi	you (sg) await us

f.	awícayap'e	you (sg) await them
g.	ų́kánip'epi	we await you (sg)
h.	ų́kánip'epi	we await you (pl)
i.	awíčup'epi	we await them
j.	amáyap'epi	you (pl) await me
k.	ų́káyap'epi	you (pl) await us
l.	awíčayap'epi	you (pl) await them

We can capture the many of these cases if we assume the lexical entry for *a'pe* is:[24]



This structure, together with our ordering constraint holding within N, satisfies forms a, b, d & j. You will recall that besides the prefixes marking person Lakhota has a suffix/clitic which

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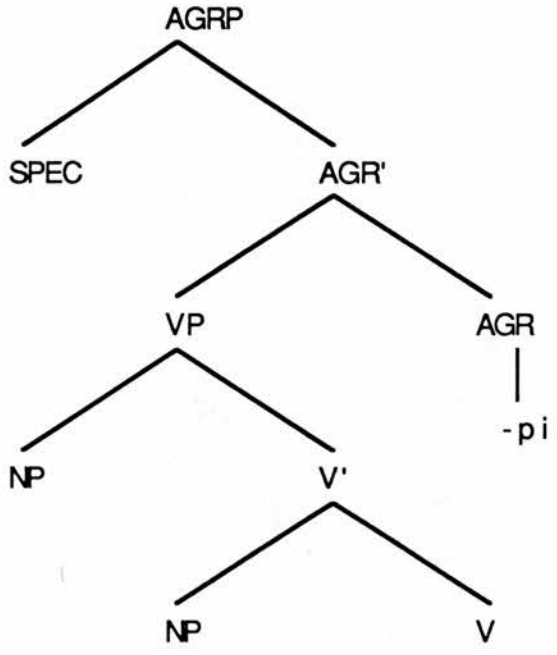
[24]I have suppressed the lexical information above the word level in the interests of space.

marks plurality of subject and/or object. The plural marker in Lakhota is a post-verbal clitic, *-pi*, the first in a string of possible clitics.



The tree above illustrates this. AGRP in Lakhota is dominated by a succession of extended IP phrasal nodes, including past, potentiality, negative, question,[25] etc. as well as a series of speaker-gender markers. This analysis separates the prefixal AGR markers which code for person from the syntactic/clitic AGR marker which codes for plurality and treats these two sets of AGR markers as separate systems.

If we reconsider the paradigm above, two problems remain, one involving the pronominal *u-* ([1 -sg]), and the other involving the pronominal *wicha-* ([3 +pl +patient]). We see that in general *u-* raises over the prepositional vowel, except in case *wicha* is there. Consider again example (e) *ųkáyap'epi*:

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[25]It may be the case that the question particle is in COMP.

(32)	ų-	-(k)á-	-ya-	-p'e-	-pi
	1-sg	Prep. Vowel	2+Agent	await	Plural

'You (sg) await us'

Here *u-* precedes the prepositional vowel (inducing a morphophonological rule inserting [k]). There are two possibilities for handling this example; (i) allow *ų-* to adjoin to a position above the prepositional vowel in the first place; or (ii) allow *ų-* to raise from its original adjunction position below the prepositional vowel to a position above it. Neither analysis seems to have alot to recommend it. In both cases, it is difficult to think of any motivation for this superiority effect, unless there is a possibility for word-internal topicalization, a process which has so far received no attention in the literature. We have already seen, however, that topicalization is frequently related to animacy in the human languages, and as *ų-* is the highest ranking pronominal on the animacy hierarchy, then perhaps this is the most profitable line to take. If there is a word-internal process of topicalization, however, we would predict the existence of two further sorts of data; (i) the existence of barriers to this topicalization - that is, there should be some cases in which this 'movement' is blocked; and (ii) further evidence of the raising of affixes, perhaps even from one word to another.[26] As we will see, both sorts of evidence exist in Lakhota. The first sort, a barrier to topicalization of *ų-*, is also the subject of the second problem encountered in the paradigm above, *wichá-*. Consider first the behavior of *wichá-* in example (c) *awičáwap'e*:

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[26]This analysis underlines the similarities between this situation and that seen in the agentivity controlled passive of Southern Tiwa and Coast Salish discussed in Chapter Five. Recall that in Tiwa and in Salish whether or not a verb can appear in the passive depends upon the person of the subject and object. In these languages, the subject must outrank the object on the agentivity hierarchy associated with person, where 1st < 2nd < 3rd. In other words, it is ungrammatical to have an active sentence in which the subject is 3rd person and the object is 1st person. Such an combination must always appear in the passive. In the case of Lakhota, an analysis is available which treats the ordering effects of the pronominal affixes in a like manner. Whether or not this constitutes passive or a form of topicalization is a difficult matter to distinguish. This fact underlines the close relationship between passive and topicalization in many languages.

(33) a- -wichá- -wa- -a'pe

Prep Vowel 3 +animate, +pl, +patient 1 +sg, +Agent await

'I await them'

In general, *wicha-* precedes all other pronominals, contrary to the prediction of the animacy constraint on pronominal order. When we consider the system of morphological agreement, as illustrated earlier in this section we notice a further interesting feature of *wichá-*, it is much too fully specified to fit neatly into the pronominal system of Lakhota, in that it codes 3 +pl +animate +patient, all other possible feature combinations for third person are not morphologically distinguished. Historically, *wichá-* is an incorporated form of *wičhásha*, 'person'. Further, remember that the presence of *wichá-* coding an argument does not require the plural agreement suffix *-pi*, which is another piece of evidence that sets *wichá-* apart from the pronominals.[27]

Given these facts about *wichá-*, we will posit that it is not a pronominal at D-Structure, i.e., a feature bundle, but is fully specified in its morphological form. This alone will prevent *wichá-* from incorporating as sister to a true pronominal.

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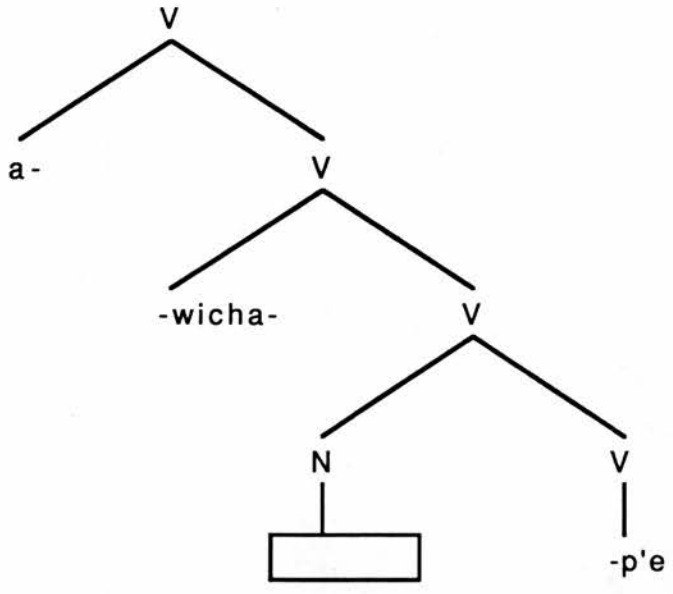
[27]The exclusion of wicha- from plural agreement suggests another possible analysis for the AGRP, one in which AGR does not project, but arises through feature passing of +plural from the incorporated pronominals, which form a constituent excluding *wichá-*, to the verb, i.e., a case of true agreement not arising through movement to the head of a syntactic projection. As there are no syntactic effects of this AGRP it could be that this latter analysis is to be preferred. However, it does not explain why plural agreement appears as a suffix, the first in a string of IP-type clitics.



If we assume that the pronominal *u-* raises word-internally, then we can motivate its failure to raise over *wichá-* given the structure above. Consider again example (i) *awič̨úp'epi*:

(34) a- -wič- -ú̯- -p'e- -pi

Prep Vowel 3 +pl, +animate, +patient 1 -sg await +plural

'We await them'

We will assume that this word-internal topicalization rule is strictly local, as might be expected, and can only occur over part of the lexical entry of the verb (*a-* in this case). If other material intervenes, such as *wicha-*, then raising is blocked. *wicha-*, then, is a barrier to word-internal movement of pronominals.[28]

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[28]The extension of the notion of barriers to movement to account for restrictions on (word internal) move-affix has not yet been suggested, as far as I know.

Further research will be necessary to develop this suggestion and see if it is feasible. However, from the above we see that some of the characteristics of syntactic barriers applies to morphological ones. In the tree above we see that lexical material at the mid V node prevents the raising of *u-*, thus we can analyze *wicha-* as acting as a Minimality barrier to movement of the pronominal material.

10.5.1. Complex Sentence Structure in Lakhota

Given the analyses of the previous section, let us now consider the structure of complex sentences in Lakhota. Clauses can function as either subjects or objects of verbs in Lakhota, the articles *wą* 'a (certain)', *ki* 'the', and *k'ų* 'the aforementioned' function as nominalizing complementizers.[29]

(35) Mary wóyute ophé-thų ki washté

food STEM-buy COMP good

'That Mary bought food is good'[30]

(36) Mary wóyute ophéthų ki slol-wá-ye

food buy COMP STEM-1sgS-know

'I know that Mary bought food'

Some verbs, for example chi 'want' take complement clauses without a complementizer:

(37) Mary wóyute ophé-thų (*ki) wa-čhí

1sgS-want

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[29]These items also appear as postnominal articles: *wičhásha wą* 'a man', *igmú ki* 'the cat', etc.

[30]Many of the examples in this section are due to Van Valin (1985).

'I want Mary to buy food'

Others allow the complementizer to appear optionally:

(38) Mary wóyute ophéthų (ki) wą-bl-ą́ke

STEM-1sgS-see[31]

'I see that Mary bought food'

These complementizers occur finally in the sentence they serve to subordinate. We will treat them structurally as heading a complement projection, which has the semantic effect of rendering a proposition an argument within the context of the higher predicate.

We further assume that any higher specifier position is available for NP-movement. This movement is restricted, though in part, by constraints on interpretation.

(39) wičhásha ki wíyą wą wówapi lé kipázo

man the woman a book this show.to

čhí

want

'The man wants to show this book to a woman'

(40) wówapi lé wičhásha ki wíyą wą kipázo čhí

'This book, the man wants to show to a woman'

---

[31]This verb selects its pronominal agreement realization from a different phonetic paradigm than the ones investigated in the previous section. This selection restriction provides further evidence for the featural analysis of pronominals at D-Structure, and for the incorporation of pronominals into a governed position within the verb.

The first animate nominal is interpreted as the agent of the verbs, given the SOV basic word order. However, the inanimate nominal *wowapi le* 'this book' can freely raise to initial position.

(41)	ix?é-thą̨ka	ki	wi̍chásha	ki	nu̧wą́-he	k'eyash
	rock-big	the	man	the	swim-CONT	but
	wą̨-yą́ke-shni					
	STEM-see-NEG[32]					

'The big rock, the man was swimming but didn't see (it)'

Arguably, this example clearly illustrates movement from a position within an embedded clause to a position external to that clause. Let us consider a possible tree representation for this sentence:

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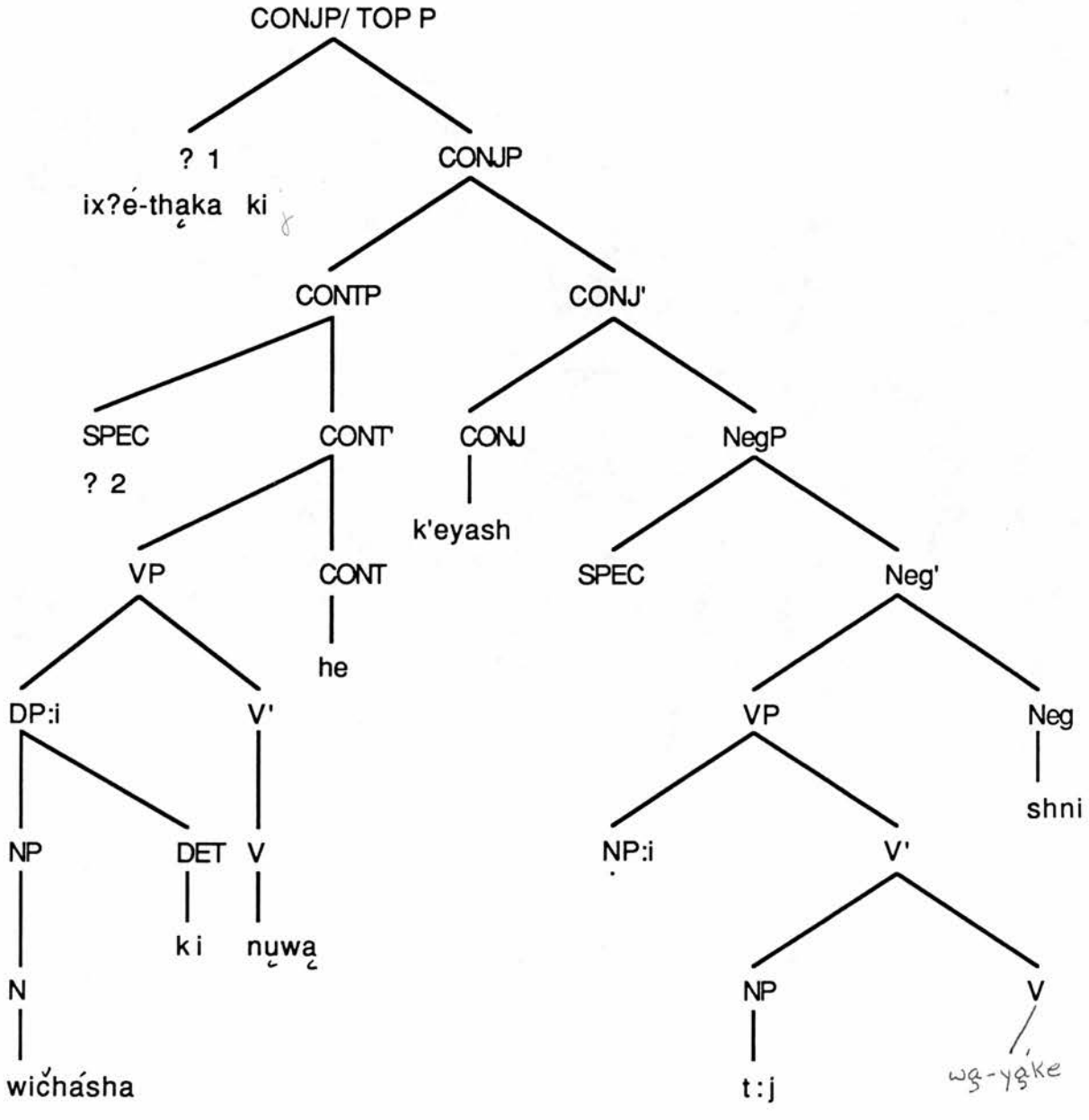
[32]This sentence illustrates two other verb final clitics which we take to head syntactic projections, *he* indicating the action of the predicate is continuing, and *shni*, indicating negation.



In this structure, we represent *k'eyash* as the head of a syntactic projection which relates two clauses, one its specifier position, and one as its complement. It denotes opposition and selects a NegP complement (Buechel 1939). Further, it forces generalized argument control between one of the arguments of the specifier clause and one of the arguments of the complement clause. We

refer to this as generalized in the sense that it doesn't force the coindexing of particular argument positions between clauses, but merely requires that some coindexing exist.[33] The major problem here is in determining the position of 'the big rock' at S-Structure. At D-Structure it occupies object position [NP,V'] in the lower clause. There are structurally two positions for it to occupy at S-Structure: (i) Adjoined to CONJP in a topic position; or [SPEC, CONTP], the specifier position of the initial clause. We assume this NP moves initially to [SPEC,NegP]. NEG L-selects VP, thus voiding its barrierhood.[34] From this position, we see that NEGP is itself selected by CONJ, and is thus not a barrier to further movement from its SPEC position. Given the analysis of topicalization in Chapter Five, we will assume that this movement is upwards to adjoin to the CONJP, creating a TOPIC position. The alternative movement, into [SPEC, CONT P] is more problematic, and will be discarded.[35]

10.5.2. Verbs of Perception and Propositional Attitude

Finally, we consider a special set of verbs in Lakhota with a very interesting property. These verbs, e.g. *wayaka* 'see', *nax'u* 'hear', *wakta* 'expect', and *iyukcha* 'think' optionally allow the subject of the complement verb to be coded as their direct object; e.g. they behave like Raising-to-Object verbs. Consider the following sentences:

(42) agúyapi ki i-yá-chu ki wa̧-bl-áke

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[33]The following two examples, also illustrating k'eyash (or eyash) are taken from Buechel 1939: *Hečíya ye mashí ẻyas wic'awala shni* 'He told me to go there, but I did not like it', and *Hiyáyapi, k'éyash tuwéni wawíchaya̧ke shni* 'They passed by, but nobody saw them'.

[34]Alternatively, if the original definition of barrier is preferred, we can assume with Chomsky (1984a) that movement of the verb to adjoin to NEG is the mechanism through which the barrierhood of VP is voided. V being a lexical category, its adjunction to NEG renders NEG a lexical category as well, and thus capable of L-marking.

[35]The force of the discussion in Van Valin (1985) is to show while that GB theory cannot adequately cope with the syntax of Lakhota, Role and Reference Grammar (Foley & Van Valin 1984) can. Van Valin considers this example to illustrate a violation of Subjacency. However, as we have seen, this movement is available to the GB grammar, and does not result in a Subjacency violation.

bread the STEM-2sgS-take COMP STEM-1sgS-see

'I saw that you took the bread'

(43) agúyapi ki iyáchu ki wą-čhí-yąke

STEM-2sgO.1sgS-see

(44) agúyapi ki iyáchu wąčhíyąke

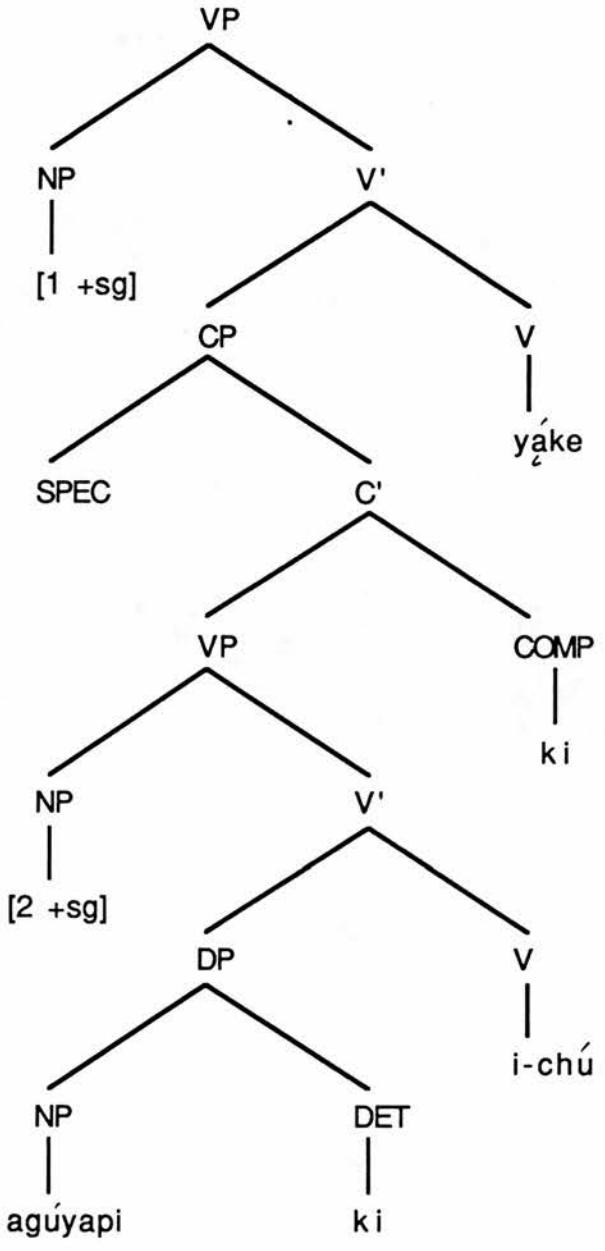
(45) agúyapi ki i-chú wąčhíyąke

'I saw you take/taking the bread'

In example (43) the agent of the lower verb is coded twice. (44) illustrates that the complementizer ki is optional, and (45) illustrates that in those cases when the complementizer is not present, the lower verb need not code its own agent (though only the interpretation in which the lower agent is 2sg is possible, the reading 'I saw you, he took the bread' is not possible, even though the verb *ichu* does have that interpretation in other contexts). If the complementizer is present, the lower agent must be coded on the lower verb:

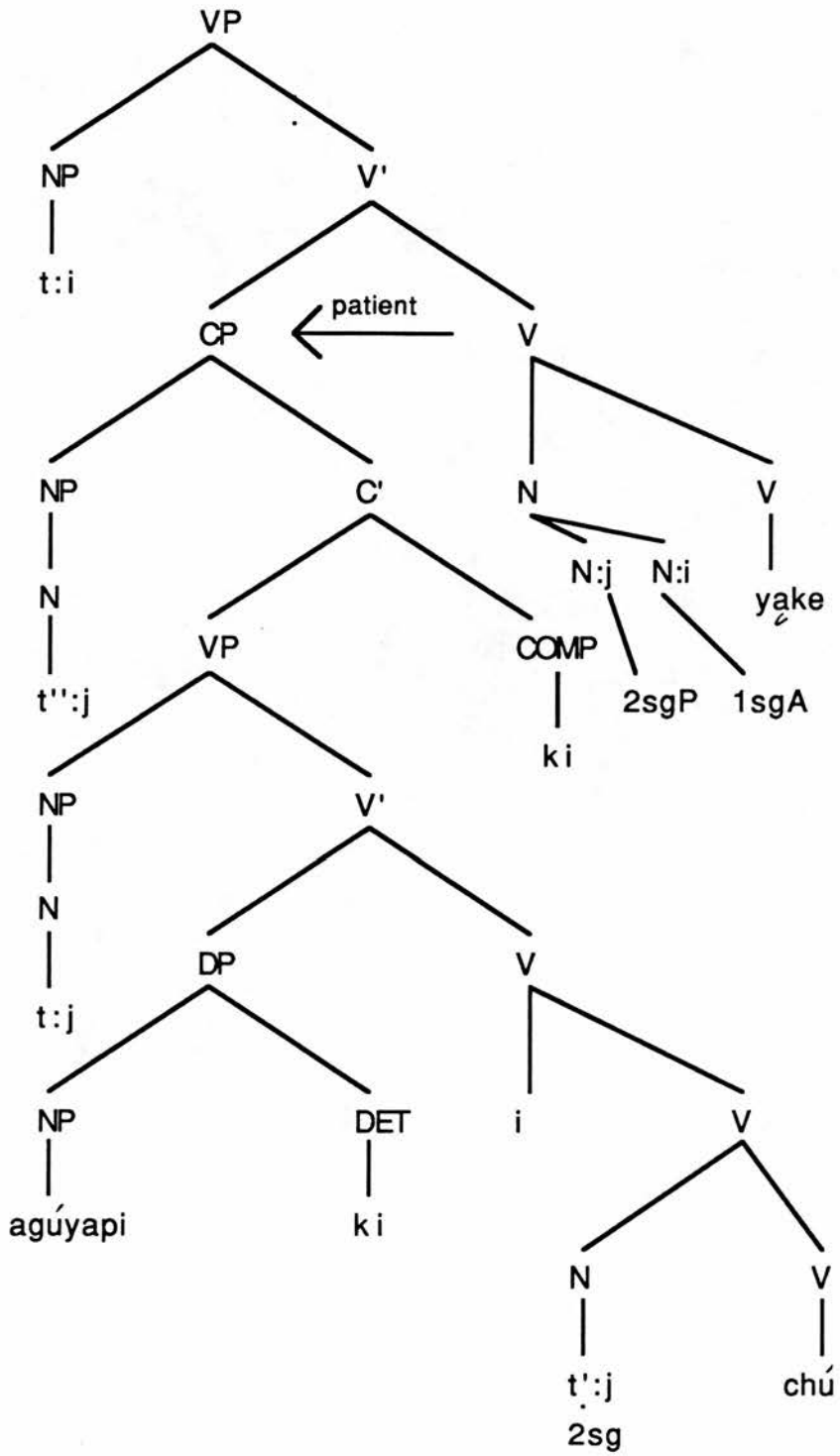
(46) *aguyapi ki ichu ki wachiyake

You will recall from an earlier section that the analysis given for pronominal argument incorporation predicted the possible availability of raising from within one V to within another. We now consider whether the data above constitutes such a construction. The D-Structure for (42) is represented below:



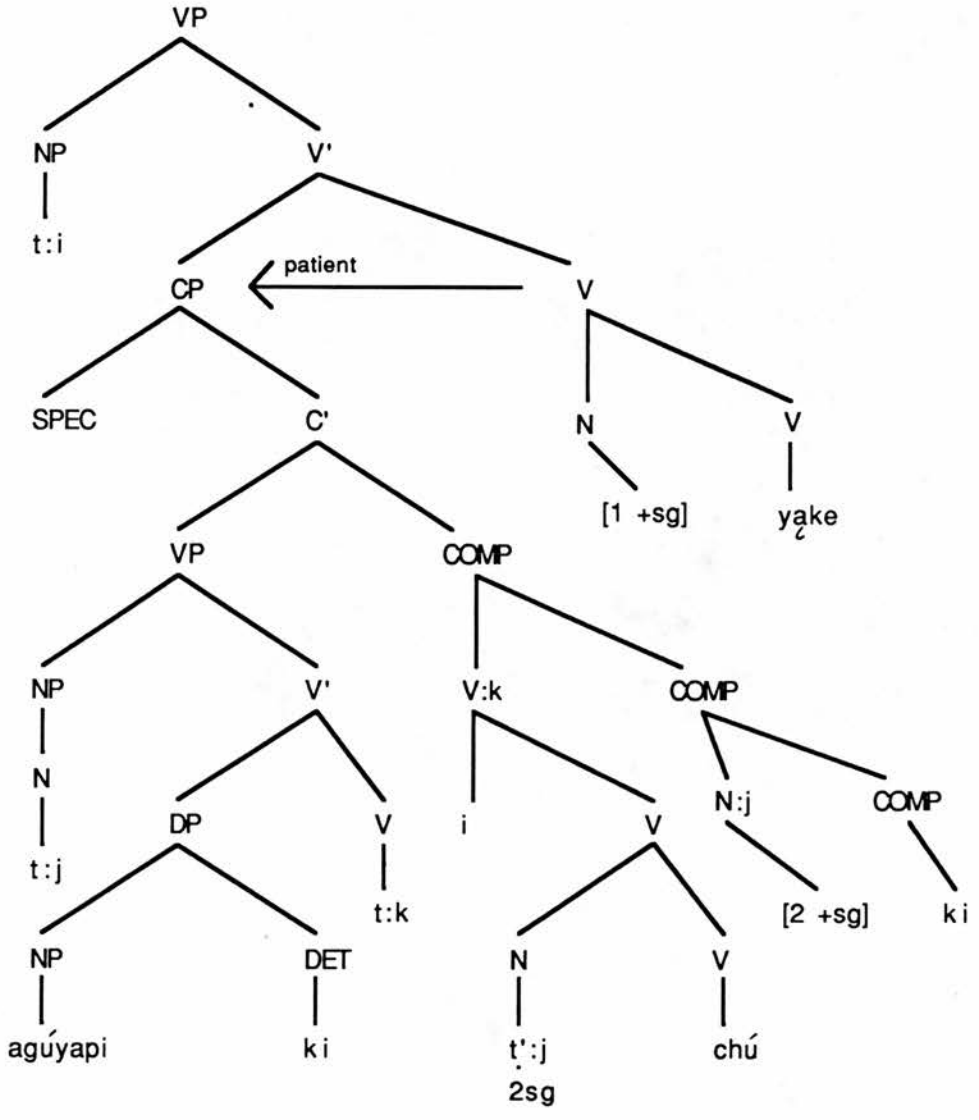
The main problem to consider is how the agreement with the lower agent manages to be expressed twice. We have assumed the absence of null pronominals external to the V in Lakhota, and thus we cannot adopt an analysis in which a null pronominal triggers agreement

in the lower clause, and then raises to a position where it can trigger agreement in a higher clause. The analysis which we will pursue is one which allows the pronominal to raise from within the lower V to adjoin to the higher V, under certain conditions. Consider, then the following S-Structure.


VP
NP
V'
t:i
patient
CP
V
NP
C'
N
V
N:j
N:i
N
yąke
VP
COMP
t'':j
2sgP
1sgA
k i
NP
V'
N
DP
V
t:j
NP
DET
i
V
agúyapi
k i
N
V
t':j
chú
2sg

The [2 +sg] pronominal moves first to adjoin to the V, a movement motivated earlier in this chapter. Once it has adjoined to V it then raises to [SPEC, CP], at this point, it inherits the Patient theta-role, assigned to CP by the higher verb, and from there it adjoins to the higher verb which governs the specifier phrase, and thus double agreement with the lower agent arises. However, this analysis must be abandoned as it violates the Structure Preserving requirement through the movement of the pronominal head to a specifier (phrasal) position. We could try to fix this by defining pronominals as distinguished categories which are simultaneously NP and N, but even if that could be generally defended, it would be hard to argue for in this case, where the pronominal has clearly adjoined to an X^0 category.

An alternative analysis involves crucially the structures created by the V as it raises.

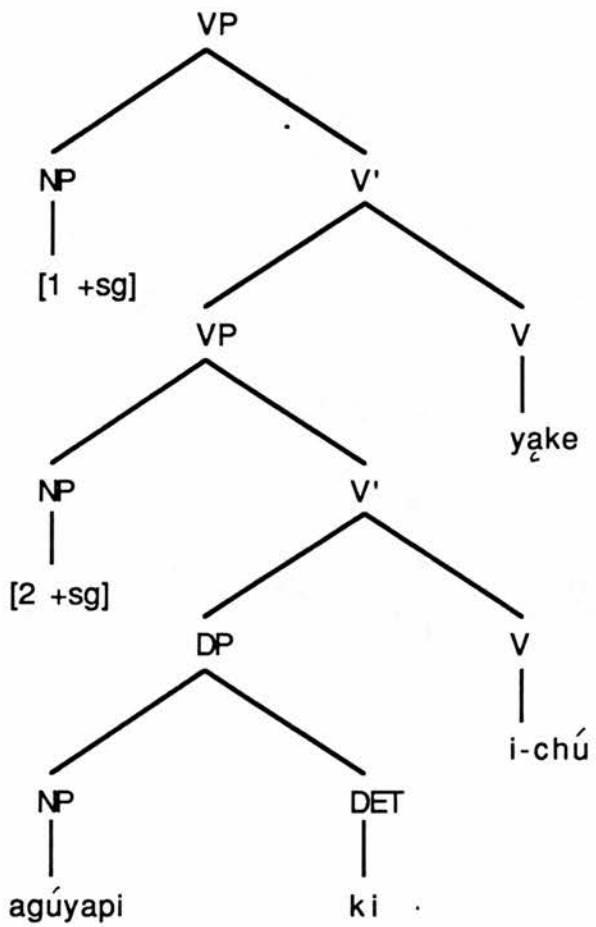


The tree above represents the structure resulting from the pronominal raising from within the lower V to a higher position within the adjunction structure created when the verb itself adjoins to COMP. This movement is licensed, as it is movement into a governing head. Note

that the trace t' contains the agreement information, and thus can still trigger morphological agreement on the verb. However, this structure is not distinguishable from the previous structure at PF, as agreement is not defined for COMP in its lexical representation. This illustrates a distinction between adjunction structures induced by lexical trees, and adjunction structures created by movement. Once the verb-COMP incorporates into the highest verb, the pronominal will again be able to raise, and thus trigger agreement on the highest verb. The pronominal argument receives the PATIENT theta-role when it adjoins to COMP, however, as COMP receives this theta-role from the higher verb. The transmission of theta-roles in these structures is very interesting, and suggests that a chain can receive more than one theta-role under certain conditions. Now we have arrived at an explanation for our example sentences (42) without agreement doubling , and (43) with agreement doubling. (44) differs from (43) in lacking an overt complementizer. This does not present a problem for the analysis above in terms of movement, but may raise a question about the assignment of theta-roles. If we assume that there is no projection of COMP, and that in this case the verb takes a bare VP as object, then we have to allow the PATIENT theta-role to percolate in some fashion to the V head. Within the V, the pronominals are only associated with the theta-roles assigned them by the internal V, but once outside, in the case of this raising, a pronominal is associated with the theta-role which the internal V (as head of VP) receives. This suggests that the pronominals are only associated with certain theta-roles within a local domain. Once outside that domain, they assume the properties of that domain (the lower V) itself. This is a possible direction for research, but requires further work. The alternative is to assume a projection of COMP with an empty head, which inherits the PATIENT theta-role, and is only licensed by the pronominal adjoining to it. This analysis is more straightforward, given the research reported in this thesis. If the complementizer is absent, and the pronominal does not raise, then the well-formed structure will lack a projection of CP, and will present a surface structure without an overt complementizer, and without agreement doubling. The set of verbs which allow this phenomenon are also those which do not require an obligatory complementizer.

The final examples to consider are (45) *agúyapi ki ichú wąčhíyąke* and (46) **agúyapi ki ichú ki wąčhíyąke*. The analysis of these examples is relatively straightforward, given the account above. If we assume that, lacking a projection of COMP, an agent can optionally

incorporate directly into the higher V, then this data is readily understandable. Consider the following D-Structure:



It is generally accepted that a verb governs the specifier position of a complement clause which it L-selects. Thus the higher verb above, *yąke*, governs [SPEC, VP] and thus the pronominal which fills that position at D-Structure. We assume further that the verb assigns the PATIENT theta-role to the VP. Thus, the pronominal in [SPEC, VP] can incorporate directly into the higher verb, thus failing to trigger morphological agreement on the lower verb, while still receiving the AGENT theta role from the lower verb in its D-Structure position. The presence of an intervening complementizer prevents NP from moving directly to incorporate into

the higher V, and further prevents the pronominal from incorporating directly into COMP, as COMP does not govern the specifier position of its complement VP.

10.6. Conclusion

In this thesis I set out to test three hypotheses about the organization of the Grammar; (1) That the grammar can be given a declarative interpretation, and thus no extrinsic ordering of rules is available, and that syntactic structures have a compositional semantics; (2) That all transparent concatenation results from operations of the rules of syntax; and (3) That all syntactic projections must be phonetically visible. Further, I have assumed that the relationship between the lexicon and syntactic representations is monotonic, the complement to the Lexicalist Hypothesis. All three hypotheses are at odds with much of the research that is going on currently in the Principles and Parameters Model, however, these hypotheses all correspond generally to the Null Hypothesis, and represent the more constrained alternative. Because of this, they represent a position which can be falsified. If less constrained hypotheses are adopted about the form of the grammar, then the situation arises where these hypotheses can never be disproved. In the course of this thesis, I cannot be said to have proved my hypotheses,[36] but I have shown that they are not readily falsifiable given what we know about human languages, further, I have shown that they offer an interesting approach to unrelated data in unrelated languages (and thus have some general applicability). The steps this followed were: (1) I developed an underspecified tree representation for lexical entries which allows lexical information to be organized in a manner which is immediately interpretable by the syntax. These lexical trees, through the formal processes of unification and tree adjunction and the operation of X-bar, yield D-Structure. Further, the structure of these lexical trees for languages with VP-external subjects yields an explanation for subject-object asymmetries with respect to movement, and for the tendency for external arguments to be "optional". Derivational affixes in English were included as heads of lexical trees, thus including some "derivational" morphology in syntax. By doing this, the existence of implicit arguments in nominalizations is accounted for.

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[36] An event which would approach technical impossibility.

(2) I proposed a parametrization of case-assigning ability into the distribution of the features [+/- NECESSARY] and [+/- UNIQUE] and used this to derive the Extended Projection Principle (for English) and to account for agreement in Labrador Inuttut. This move forced me to (3) arrive at a new treatment of passive in English, however, as verbs in English have the case-assigning matrix [-NECESSARY, -UNIQUE] (i.e., are profligate case-assigners). The analysis of passive proposed subsumes passive to other focus rules such as topicalization, by assuming that the passive morpheme -en heads a syntactic projection and assigns the sentential theta-role TOPIC to its external argument position. Topicalization in general was also considered, and proposals made concerning the syntactic structure of topicalized sentences in both Topic Prominent and Subject Prominent Languages. In considering a theta-theoretical analysis of passive, I further proposed (4) that animacy effects are properly considered as syntactic, and are best considered as part of the information contained in theta-role assignment. (5) Specifier positions were then considered, and the dichotomy between the characteristics of D-Structure selected and un-selected specifiers was discussed. This consideration led me then to propose a revival of the Raising-to-Object Analysis, with the embedded subject raises to [SPEC, VP], from this, the parallel is drawn with passive, and the possibility of NP-movement to [SPEC, IP]. [SPEC, VP is then considered as a similar position to [SPEC, IP] with respect to the possibility of NP-movement. (6) Different types of relative clauses cross-linguistically were examined, and the PF-Licensing Principle was shown to make desirable predictions about the structure of the so-called headless relatives. Data from Piapoco was considered in some detail, and the PFLP was shown to derive certain attractive tree structures. Agreement in Piapoco was considered, and a feature percolation through SPEC-head coindexing was shown to give the effect of morpheme harmony on certain verbal incorporation structures. (7) The prohibition against invisible syntactic projections and general considerations of the relationship between heads and their complements in the lexicon led me to propose a redefinition of barrier, such that any head which selects in some way its complement L-marks that complement and thus voids its barrierhood. In this case, then barriers only arise relativized by position, i.e., specifier position and adjuncts (not sisters to lexical heads). If this definition of barrier is adopted, then Zero Subjacency holds and no counting of barriers is necessary. An extension to the X-bar schema was proposed which underlies equative or predicative constructions. (8) Finally, the hypotheses of this thesis were tested in some detail in analyses of Labrador Inuttut and

Lakhota. These analyses highlighted the difference between agreement and pronominal incorporation, and the typological difference between languages with and without grammatical function changing rules and overt case marking. In the analysis of Labrador Inuttut it is proposed that those cases characterized by "zero-marking", NOM and ABS, are actually not instances of case-marking at all. It is proposed that NPs assigned these cases are actually coindexed with INFL and thus are not required to be case-marked in order to pass the Case Filter, coindexation with INFL provides these NPs with identification as arguments with respect to propositional predication. In the analysis of Lakhota the structural basis for discontinuous morphemes and pronoun doubling is proposed, and word-internal movement is explored.

The framework developed in this thesis yielded interesting results and possibilities with respect to the analysis of these languages, which have in the past posed certain difficulties for the Principles and Parameters Model.

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